CALIFORNIA

OIL WORLD

and Petroleum Industry

Tulsa Public Library
Arts Technical Dept.
Tulsa, Okla.
171 P

BAKER CEMENT RETAINER

A BETTER QUICKER SAFER WAY TO

RE-CEMENT

SHUT OFF BOTTOM WATER

TEST UPPER CASED FORMATIONS

DO CEMENT SQUEEZE JOBS

REDUCE GAS / OIL RATIOS

CEMENT BEHIND SECTIONS OF PIPE

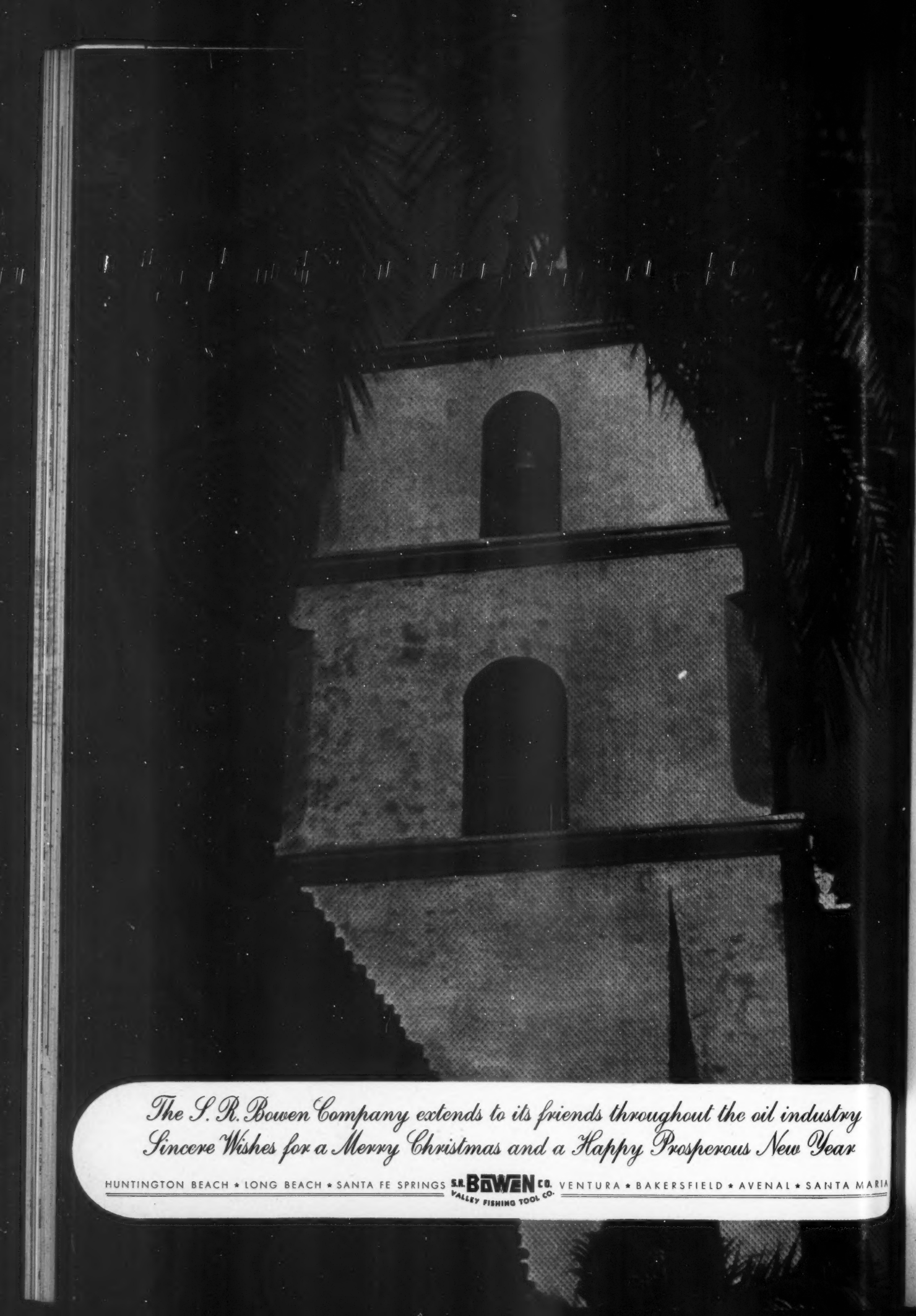
DO REPAIR WORK OF ALL KINDS IN DRILLING OR PRODUCING WELLS

BAKER OIL TOOLS, INC.

Send for Baker Broadcast No. 17-A—Describing and illustrating the design, construction and applications for this remarkable tool.

BAKER CEMENT RETAINER

Vol. 31
No. 23
Whole
No. 1526


The S. R. Bowen Company extends to its friends throughout the oil industry
Sincere Wishes for a Merry Christmas and a Happy Prosperous New Year
HUNTINGTON BEACH ★ LONG BEACH ★ SANTA FE SPRINGS
S.R. BOWEN CO.
VALLEY FISHING TOOL CO.
VENTURA ★ BAKERSFIELD ★ AVENAL ★ SANTA MARIA

CALIFORNIA
OIL WORLD
and Petroleum Industry

THE AUTHORITY ON THE CALIFORNIA OIL INDUSTRY

FIRST ISSUE
DECEMBER 1938
VOL. 31 » NO. 23
WHOLE NO. 1526

IN THIS ISSUE

Equipment Changes Brought by Deeper Drilling 3

Pictures of Activity Following Richfield's Latest Discovery 10-11

Federal Oil and Gas Permits Expire Dec. 31 11

Production and Development 16

Laugh This Off 18

State Drilling Report 19

San Joaquin Valley Development 22

Los Angeles Basin Development 27

Coastal District Development 31

PETROLEUM PUBLISHERS, INC. PETROLEUM SECURITIES BUILDING
LOS ANGELES, CALIFORNIA - MEMBER OF THE AUDIT BUREAU OF CIRCULATIONS

WALTER C. MONROE	President and Editor	R. N. RICHEY	Assoc.-Editor
M. S. FOX	Vice-Pres.	DAVIS E. BROWNE	Secty.-Treas.
R. C. CONINE	Assoc.-Editor	L. O. MILLER	Advertising Manager

W. E. AUSTIN, Manager, California Oil World News Service

GEORGE S. MacDONELL, Manager, California Oil World Directory

California Oil World and Petroleum Industry is published twice a month at 536 Petroleum Securities Bldg., 714 West Olympic Blvd., Los Angeles, California. Entered as Second-class Matter January 1, 1937, at the post office at Los Angeles, California, under the Act of March 3, 1879. Subscription price: $1 per year in U. S. and possessions, $2 in foreign countries, including Canada. Member of the Audit Bureau of Circulations.

December 8, 1938

Telephone Number RIchmond 2136

S D BECHTEL CO
CONTRACTORS - ENGINEERS
155 SANSOME STREET
SAN FRANCISCO

November 1, 1938.

The AllSteel Products Manufacturing Co.,
P. O. Drawer 2001,
Wichita, Kansas.

Gentlemen: Attention: Mr. H. W. Cardwell, President.

In response to your request for information relative to the Rocky Mountain Pipe Line Company's line from Lance Creek to Cheyenne, Wyoming, the following is pertinent information which may be of interest to you:

1 - The line consisted of approximately 136 miles of 8 5/8-inch OD pipe.

2 - Pipe was first delivered August 25, 1938 and the final tie-in was made October 31, 1938, a lapsed calendar period of 66 days during which 7 days were lost because of unworkable weather.

3 - The entire line was constructed with a single gang. The average production was 10,873 feet of completed line per calendar day and an average of 12,108 feet of completed line per day worked. The maximum pipe laid in a single day was 35,200 feet.

4 - The entire construction of the line was contracted to S. D. Bechtel Co., San Francisco, California.

5 - Subcontractors on the line were:
Welding - H. C. Price Co., Bartlesville, Okla.
Hauling & Stringing-C. Hobson Dunn, Dallas, Texas.

6 - Cardwell Diesel Sidebooms were used exclusively on the entire job and the swing gang operation, including bending, was done by two Cardwell RD 6 Sidebooms.

Our construction contract was carried on under the direction of Geo. S. Colley, Jr., manager of our pipe line operations.

Trusting the above is the information you desire, I am

Yours very truly,
S. D. BECHTEL.

SDB:DP

Two World's Record BROKEN

by the S·D·BECTEL COMPANY.

"CARDWELL" SIDE BOO

There is no business we kn
of, where profit in the job is
dependent on quality machi
ery, as there is in pipe linin
The job is always far aw
from the source of supply, a
a lot of time is lost when t
machinery is down for repai

The sturdiest of alloys, with every wearing part heat-treated, is our insurance policy for your profit.

We build 62 models and sizes of servicing winches and drilling rigs—send your well depths and details of your well equipment—for recommended model and size.

ALLSTEEL PRODUCTS MFG. CO.
Wichita, Kansas, U. S. A.
801 So. Wichita St., P. O. Drawer 2001
CABLE ADDRESS "ALLSTEEL" PHONES L. D. 289, LOCAL 4-4381—4-4389

CARDWELL ALLSTEEL
REG. U. S. TRADE MARK PAT. OFFICE
THIS TRADE MARK INSURES HIGHEST QUALITY AT LOWEST PRICE

F. J. OLSON, 539 PETROLEUM SECURITIES BLDG., LOS ANGELES, CALIFORNIA
PHONE PR. 1661

A

Deeper and Faster Drilling Bring Many

Changes In Size and Power of Equipment

By Glenn Merkley
The National Supply Co.

The percussion or cable tool system was used in drilling the Drake well to 69½ ft. in 1859, while the rotary method, which has evolved itself into our most practical method of drilling today, made its appearance in 1900. The percussion method continued in favor, however, until about 1912, when the rotary system started to make rapid strides, drilling to 7300 ft. in 1924, 11,377 ft. in 1934, and 15,000 ft. in 1938.

Steam power for drilling wells during the 1910 era consisted of 40 or 50 H.P. boilers and maximum pressures of 150 pounds per square inch. Operators are today using 130 H.P. 350-pound pressure boilers equipped with integral superheaters, and within the year it is anticipated that 500-pound boilers will be in use.

The hoisting engines have consistently increased in size from the old 10x10 Twin up to the present 14x14, and 15x14 Twins are not far off. Improvements in drilling equipment and drilling technique have a normal stimulus, resulting in a consistent rate of progress, but the recent discovery of oil sands at 11,300 to 13,500 ft. levels in the San Joaquin Valley have created demands for new equipment to meet field requirements of heavier loading and faster rotating speeds. These new requirements constitute radical design changes, as well as metallurgical problems, and are further complicated by the operators' demands for unitized assemblies to reduce disassembling, rigging-up and transportation costs.

Derricks

Most derricks in use today are 122 and 136 ft. high with 24- and 26-ft. square bases, respectively. Some operators in the Mid-Continent area use a special 30-ft. base with the 136-ft. derrick and several California operators have followed such practice where extra floor space was desirable. With deep well development at Rio Bravo and Wasco, the tall or 178-ft. derrick has come into greater prominence, allowing the use of 126-ft. drill pipe stands in place of the customary 88-ft. stands. Greater speed in running in and out of the hole is accomplished with these longer stands because crews have less joints too make and break, and the greater floor space provided by the 32-ft. square base results in greater convenience in handling equipment and safety for the personnel.

Glenn Merkley

Some operators are adopting derricks with extended legs, raising the derrick floor six to eight feet above the ground level. This practice facilitates access to blowout preventers, reduces cellar size and depth, and concrete yardage. Removable steel sub-structures are replacing wood or the combination of wood and steel, thus providing a more rigid and safe support for the heavier strings of pipe.

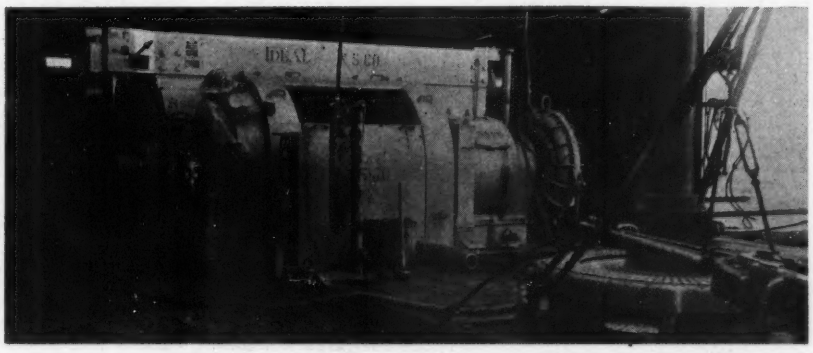
Crown and Traveling Blocks

The latest crown and traveling blocks are designed to accommodate loads of 300 to 350 tons and have sheaves 48" in diameter. Older blocks were normally rated at 100 to 150 tons and contained sheaves of 30" to 36" in diameter. It has been common practice, as loads increased to increase the number of lines rather than increase the line diameter, because any change in line size usually required a change in both the crown and traveling block, as well as the drawworks drum, but operators are rapidly passing through the transition period and purchasing blocks for 1⅛" or 1¼" line, according to anticipated loading. Coincident with the congested space in 136-ft. derricks on deep wells, because of the increased number of stands, narrow type traveling blocks have been developed so that greater clearance could be obtained at the finger board and allow the racking of another row of pipe. These blocks are available in both the double and single deck design but with the larger derrick providing greater space, the narrowness of block will not be of prime importance.

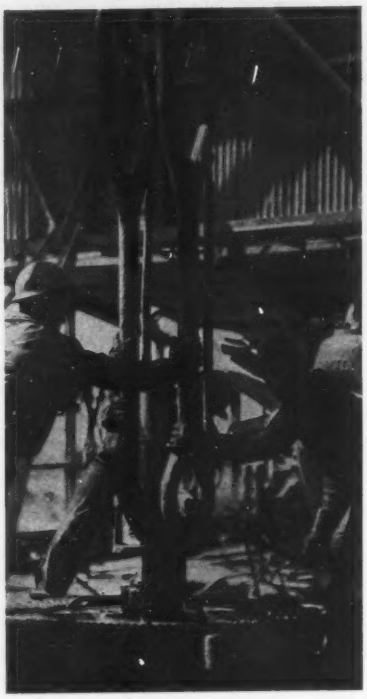
Casing Hooks

Casing hooks are designated and referred to as 8", 9" or 10", as the case may be, and this measurement is the diameter of the upset portion of the hook shank. These hooks are of the open type, the largest of which has been the 10" with a capacity rating of approximately 215 tons. The trade demanded hooks of greater capacity but less bulk, consequently, manufacturers abandoned the open type design in favor of a closed latch type. Closed latch hooks are now available in an all cast steel or an all forged steel material and are referred to by type and capacity rather than shank size.

These new hooks are available with a large throat to accommodate both the links and swivel bail, or a small throat to accommodate the swivel bail only and carry the elevator links on ears or small hooks made integral with the hook assembly. Another type of hook, referred to as connector, eliminates the large hook throat entirely and incorporates two small ears, from which elevator links can be independently suspended. The elevator links, when thus used in conjuntion with a connector, not only



carry the load when going in and out of the hole with drill pipe, but also while drilling. A special shank and saddle is attached to the swivel bail, thus providing an easy means of attaching elevator to swivel bail.



Swivel

Manufacturers have been confronted with a dual problem in swivel design because this particular commodity must not only carry heavy loads at high R.P.M. but must pack off against high pressure. Operators on deep wells in the San Joaquin Valley have almost over night increased rotative speeds from 125 R.P.M. up to 400 R.P.M., and maximum normal pump pressures have increased from 800 to 900 pounds up to 1500 pounds per square inch. In spite of these increased demands, the designer has been able to provide swivels of lighter weight and greater trouble-free performance. Features such as automatic packing between the rotating swivel sleeve and body, as well as the wash pipe packing, have proved their merit, but drilling crews have to consistently lubricate the packing at regular intervals in order to obtain maximum wash pipe and wash pipe packing life.

Rotary Drives

It has been common practise to drive the rotary machine with the same prime mover that drives the drawworks, but some operators have recently discarded this practise in favor of an entirely separate drive for the rotary. One type of drive is mounted on the derrick floor; that is, the engine and rotary machine are assembled on a common set of skids making a unit assembly. The other type mounts the engine at ground level underneath the derrick floor and drives up to the rotary machine. The floor units are usually powered with vertical twin steam engines having a variable cut-off and a two- or three-speed transmission is located between the engine and rotary. The underfloor drives make use of horizontal engines and their location beneath the floor provides clear derrick floor space for operations, which has proved to advantage in deep drilling. Underfloor drives are in use with 9x8, 10½x10 and 12x12 twin engines, with the latter predominating at Rio Bravo because of the greater power demands in that particular field.

Rotary Machines

The trend from normal rotary speeds of 100 up to 250 R.P.M. and occasional maximums of 400, not only required more power, but placed excessive speeds on chain and abnormal wear on rotary parts. As a result of this trend, new rotaries were designed with gear ratio reduced from 3.58 to 2.76, and spiral gears substituted for the regular spur gear to give greater gear life and quietness in operation. The bearings were more securely sealed off against the intrusion of mud from wet jobs and lubricating of bearings improved.

In conjunction with the rotary a new type of drill stem bushing or attachment was developed, whereby the drive from table to drill stem is taken direct instead of going through the split table bushing with its customary backlash and wear. The bushing will accommodate renewable liners, thus making the bushinging adaptable for use with either the regular square drill stem or the octagonal drill stem.

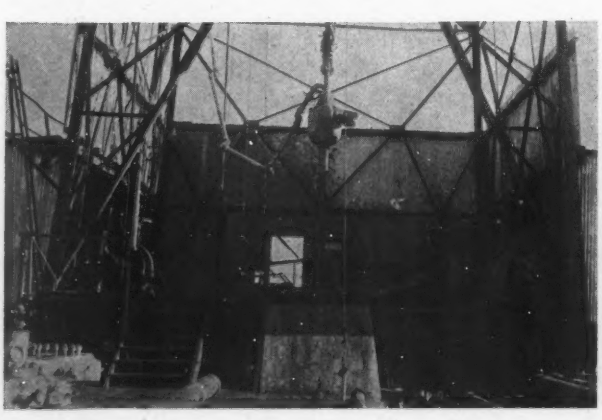
The new table bushings used in conjunction with the new special drill stem is designed with a bowl deeper than the usual slip bowl, thus providing greater backing for extra long drill pipe slips. The extra long drill pipe slips have the advantage of distributing the load over a greater area and minimizing any crimping of the drill pipe. The slips are built in a hinged three-piece unit and have renewable liners. The hinged design keeps each section in alignment and insures slips being set in unison with a more uniform grip on pipe.

Kelly-Octagon

The Kelly or drill stem, while originally being round and then fluted, has for many years been a standard square, available in various sizes, but a recent trend has been toward an octagon or hexagon Kelly. The octagon Kelly was originally developed for use in pressure work, as it was easier to pack-off against with rubber packers. With smaller casing programs coming into vogue, the octagon Kelly has an advantage over a corresponding square size Kelly in that it provides greater fluid passage area between Kelly and pipe and further allows the use of a larger fluid passage in the Kelly proper.

Hoisting Engine

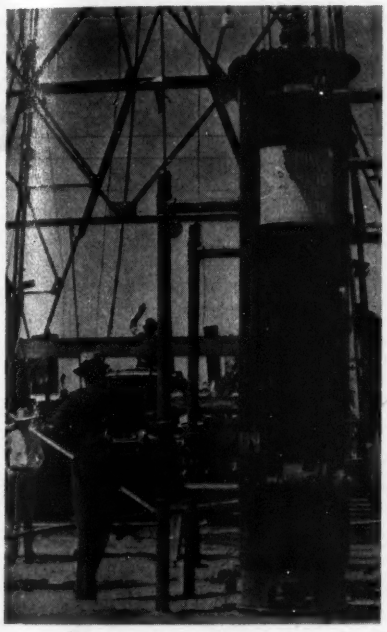
Power for hoisting purposes has been increased from the standpoint of steam pressure and engine size. Hoisting engines have increased in size in various stages from the old 10x10 until the 14x14 is now standard on the major number of deep drilling jobs. These 14x14 engines with 350-pound boiler pressure are de-



veloping more than 1200 H.P. on field installations and have, in conjunction with the tall derricks, reduced the round trip time. Round trips at 11,000 ft. with 4½" drill pipe are being made in less than four hours. In fact, some operators have worn out three bits and made three round trips to an approximate depth of 11,000 ft., all within a 24-hour period.

Draw Works

Prior to 1929, drawworks were of the two-speed, open type with cast iron single chain sprockets, cast iron brake rims, wooden posts and babbitt bearings. In comparison to these old types there have been radical improvements both in design and material. The latest 23-10½-FE drawworks have double chain sprockets with machine-cut hardened teeth completely enclosed and operating in a cascade oil circulating system. The brake rims have been increased in diameter from 36" to 54", are of rolled steel material and heat-treated. Plain bearings have been replaced by roller bearings. The wooden posts with bearing boxes bolted on were replaced by structural H-beam and these, in turn, have been replaced with steel plate built-up box section containing the bearing boxes as an integral part of the frame. Drum spooling diameters have increased from 12" to 32" and widths from 28" to 47".



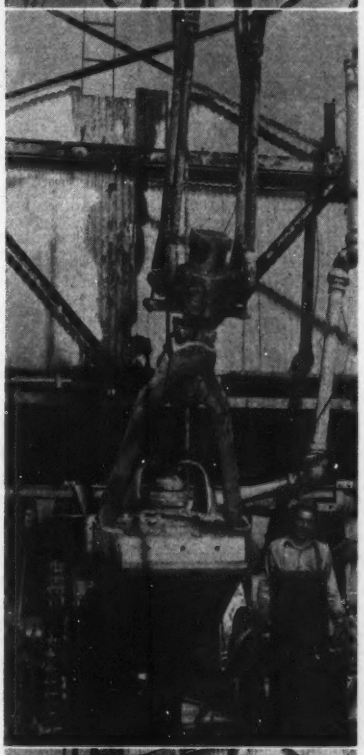
While improvements in drawworks design have been a consistent step-by-step procedure, one will note that the changes were closely allied to the increasing depths of wells. With loads getting heavier, the first improvements were directed toward the brakes and brake rim material. In dropping a 100-ton string of drill pipe in the hole 88 ft. in ten seconds and bringing the pipe to rest over 4000 H.P. would have to be absorbed. Needless to say the tremendous amount of heat created by this energy was detrimental and often created cracks in the steel rims before an adequate amount of wear could be obtained.

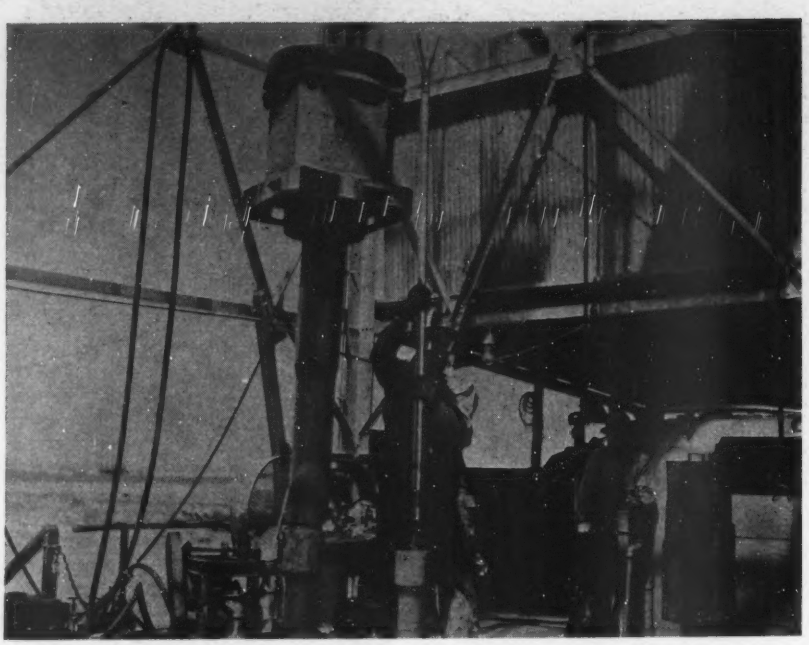
The metallurgist, by improving steel and brake lining, assisted greatly in overcoming this obstacle. Water cooled brake rims where cold water is circulated on the underside of the rims were developed and are now in use, but the development of the Hydromatic Brake has been the greatest contributing factor to reducing wear to a minimum. The Hydromatic Brake is now used on the majority of medium depth wells and is absolutely essential on deep drilling jobs. The Hydromatic Brake will not bring a load to rest but will regulate the speed of fall, acting somewhat like a governor and thus absorbing a majority of the energy.

With manufacturers catching up on braking problems, the operators demanded larger casing lines and more power for hoisting purposes. These demands resulted in casing line sizes being increased from 1" to 1⅛" and to 1¼". The increased line size called for larger diameter and longer drums. Larger drums required spreading of bearing centers and, consequently, a larger shaft diameter and resultant increase in weight.

Automatic catheads have been improved from both the safety and strength angle, while an entirely new product, known as the catline hoist, has been introduced for installing on the driller's side of the drawworks. This catline hoist uses a ⅝" steel line in place of the regular hemp catline and responds to hoisting or lowering a load by the driller pushing or pulling on a small lever. If the driller should accidentally fall or let go of the lever for any reason whatsoever, the load will automatically stop. The catline hoist, while saving on hemp lines, has its greatest advantage in safety. That is, it eliminates the driller having to wind the rope around the cathead with the ever-present danger of becoming entangled.

Tall derricks required more line to be spooled on the drum and the line spooling problem became more acute. Some operators use plain drums, some use plain spiral grooved drums and still others use spiralled grooved drums. In order to reduce line whip and aid in the proper spooling of the line, operators make use of two and sometimes three line guides. In conjunction with the wire line spooling problems and the high wire line stresses, more attention is being





paid to the use of properly designed wire line clamps or tie-downs for the dead line. After spooling the line on the standby drum a wire line clamp of exceptionally long grip is sometimes attached to the line above the drum. Where no standbys are used, which is the case with some operators even on deep wells, a special type of tie-down is used where two or three wraps of line are taken around a round spool or drum and then held in position by a bronze clamp.

While the designer was improving on the breaking and hoisting mechanism operators were endeavoring to reduce rigging-up and transportation costs, and as a result, the unitization of equipment has in one stage or another become universal practise.

On large steam rigs operators are, when drilling is confined to one lease, moving and spudding-in within 60 hours. Internal combustion engine rigs capable of 5000-foot work and unitized to meet highway weight and width limits are being moves and spudded-in within 30 hours.

While all these features are improvements and have their various advantages, they place a tremendous burden upon the manufacturer when he endeavors to properly protect the trade with an adequate stock. In the past it was possible to stock the old No. 5 type of drawworks without there being several changes required at time of sale. Today drawworks are either of the open type or the enclosed type, single or double chain sprockets, cast or machine-cut sprockets, brake rims water cooled or plain, drum shaft with or without Hydromatic Brake, spooling drum grooved or plain, and if grooved a possible selection of 1", 1⅛" or 1¼" line. Long skids, as specified in Mid-Continent work, or the short type, together with several other combinations, all of which affect one's ability to adequately meet the demands of various localities and customs without too seriously penalizing the operator on delivery or the manufacturer on obsolescence.

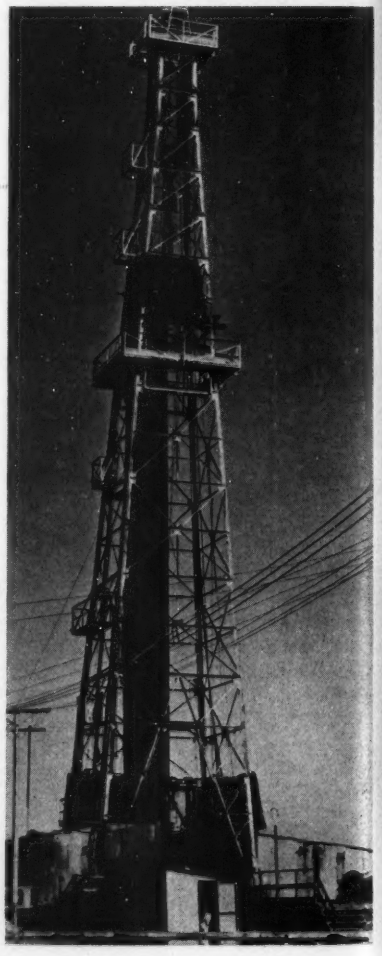
Pumps

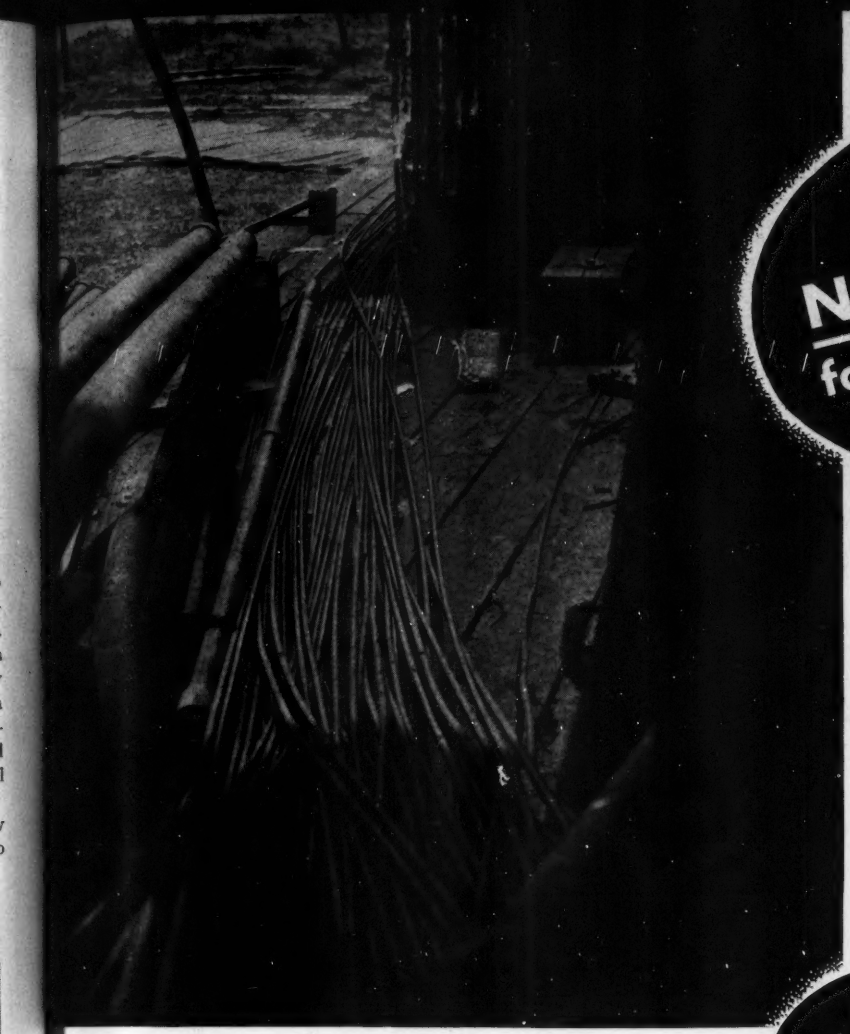
The duplex double-acting steam pump continues to be the most popular type of pump for circulating the mud fluid. No changes have been made in the basic principles of the pump, but improvements have been made toward increasing efficiency and the size, as well as the working pressures, have been increased. The duplex steam pump is exceptionally flexible, adjusting itself to the varying conditions of available power against pressure and fluid volume. There seems to be no set criterion, however, by which one can foretell the quantity or pressure of fluid required because of the varied underground formations. In some localities high pressure and large fluid volume seemingly have little advantage, while in other localities fast drilling time is the result.

At Rio Bravo the majority of the pumps are 15½ x 8½ x 20 capable of discharging as high as 1000 gallons per minute, and with 350-pound steam pressure, operators will only use two sizes of liners in drilling to 11,300 ft. At the 11,300-ft. level normal pump pressures are in the 1200-pound range, but higher pressures are sometimes used and compound pressures of 3500 pounds have been encountered.

Power pumps are available in the large 7¾ x 18" and 7¾ x 20" sizes with a hydraulic horsepower rating of 350 and 400, respectively. These pumps, while of long stroke, are not adequate in power capacity to consistently put out the work now being required of the standard 20" steam pumps in the Rio Bravo area. Power pumps have, however, become quite popular on internal combustion powered rigs, and on some steam rigs where steam saving is an item, the power pump is resorted to and driven by steam engines having a variable cutoff.

On deep drilling jobs mud returns are usually warm and sometimes badly gas cut, which condition is detrimental to pump operation. Some operators, therefore, place the pump suction under a head and also de-gas the mud. With high derrick floors pump suctions may be placed under a fluid head by using a 3- to 4-foot high mud tank. Some operators install their pumps below ground level to obtain a fluid head and still others use a secondary pump for pumping mud out of a pit located below ground level and then discharging into





THIS IS NOT the LIFE for good sucker rods to lead!

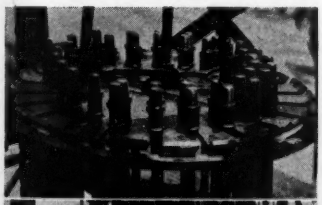
Elimination of sucker rod manufacturing hazards are futile if abuses are allowed to occur after the product has left the factory. Every oil operator knows of the hazards which occur during the selection, transportation, storage, installation, operation and pulling of rods.

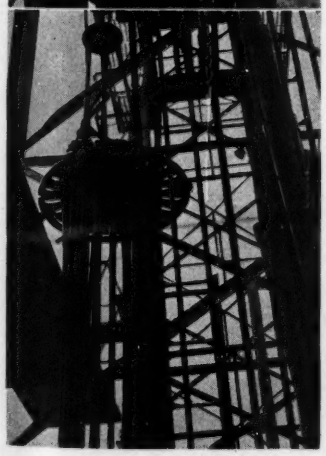
Axelson realizes that the advancement made possible in sucker rods has been made through the continual co-operation of its customers—the oil companies themselves. It is realized that every oil company employee endeavors to exert at all times every precaution in safeguarding the interests of his company. To obtain maximum service from any sucker rod, proper installation and the elimination of abuses are essential. Even Axelson sucker rods, as fine and as durable as 47 years of manufacturing experience can build them, will not stand up unless operators co-operate in the matter of proper use.

To eliminate all possible sucker rod and coupling abuse occasioned by the "human element" is Axelson's aim—toward such accomplishment, Axelson respectfully solicits the continued co-operation of everyone in the industry.

Graphically illustrating how NOT to handle sucker rods. No sucker rod can be expected to stand up under such conditions.

..but THIS IS

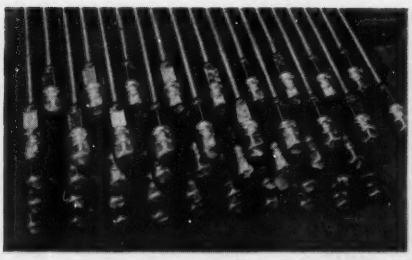




(Top): A sucker rod hanger, which is a necessary piece of equipment for the preservation and care of sucker rods. (Bottom): This photo shows sucker rods suspended from the rod hanger, thus eliminating any stress or strain on the rods and preventing kinking or bending.

Special trucks like the one illustrated above afford maximum protection for sucker rods in transportation.

The care and consideration of the rod crew is of vital importance in gaging rod life and avoiding "down time."



Sucker rod pin ends are protected with metal caps and the couplings with metal plugs which keep dirt out of the threads and prevent damage when handling.

THERE IS NO ECONOMICAL SUBSTITUTE FOR QUALITY

AXELSON

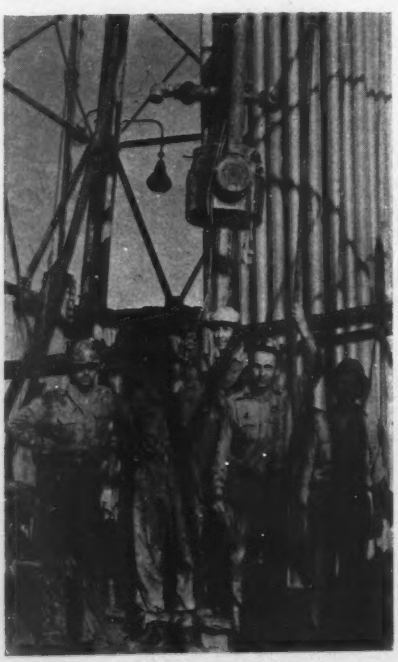
DEEP WELL PLUNGER PUMPS · SUCKER RODS

AXELSON MANUFACTURING COMPANY — P. O. Box 98, Vernon Station, Los Angeles • St. Louis • 50 Church Street, New York • Tulsa
Mid-Continent and Eastern Distributor: Frick-Reid Supply Corporation
Rocky Mountain Distributor: Great Northern Tool & Supply Company
Foreign Representatives: "COSMOS" Soc. in Nume Colectiv, Bucharest, Roumania • *Direct Factory Representative,* Bucharest, Roumania • Industrial Agencies, Ltd., San Fernando, Trinidad, British West Indies
Factory Representative, Maracaibo, Venezuela • Armco International Corp., Buenos Aires, Argentina

a tank which floods the main pump section.

Improved pump manifolding is noticeable on all rigs. Plug valves are noticeable on many rigs and pipe connections are made up with quick coupling unions, thus standardizing set-ups and reducing disassembly and reassembly time. The use of a rubber hose on the pump suction with resultant dampening of vibration is noticeable on a number of rigs, and in some cases even the discharge line from pump to derrick stand pipe is made up of flexible hose. For compounding purposes a quick operating blind flange is being installed in the suction line of the second stage pump in place of a gate valve.

In conjunction with improvements in pump design and methods of circulating the mud fluid, operators are making advancement in the technical control of mud quality, which practise has not only saved considerable sums of money in weight material and control of well, but improved operating conditions when running drill pipe in and out of the hole. The A.P.I. committees have cooperated in this development work to the point where standardization tests will be adopted for determining such items as density, viscosity, gel strength, gel rate, sand content and filter cake thickness.



Boilers

California operators have generally favored 250-pound pressure boilers, but within the last year 350-pound pressure and superheat have become popular. The 350-pound pressure boilers being installed are of a new modern high capacity type, having the latest features essential to high capacity steam generation and ease of transportation. Larger fireboxes and shells are provided with resulting larger flue area and smoke box doors are gasket sealed. The larger shells permit large steam space over the crown sheet, as well as larger steam liberating area at the water line, and by eliminating the dome and using high tensile steel plate, boilers of lighter weight are obtained. These boilers were primarily built to provide greater steaming capacity and thereby made it possible to reduce the number of boilers required in a battery. Many California operators have batteries consisting of five and four boilers, and in some instances where less power is required, 3-boiler batteries are noted.

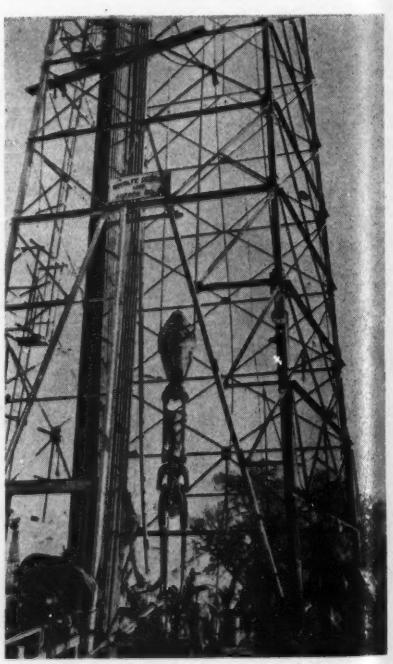
At Rio Bravo, four of the new type boilers are used in a battery and are working satisfactorily under loads requiring from 35% to 50% more steam than has heretofore been used in drilling the average deep well.

The unitization trend has also influenced boiler plants, with some operators mounting boilers on skids, together with burners and piping. The piping is so arranged in units with each boiler that it need only be flanged and unflanged for moving purposes. In some cases the boiler feed pumps, feed water heater, gas header and boiler feed pump headers are mounted as a single unit on skids. Auxiliaries, such as feed water regulators, low water alarms and fuel cut-off valves, are being installed in whole or in part. A trend toward increasing efficiency is noticeable in insulated steam lines, insulated boilers with metal clad covers and preheating of boiler feed water.

Drill Pipe, Tool Joints, Bits

Range 3 drill pipe is beginning to make its appearance and it is being used in 178-ft. and 136-ft. derricks. Internal flush drill pipe is gradually coming into greater prominence and alloy steel of substantially higher yield point than Grade D is being experimented with. API full hole tool joints are replacing the standard API joint and further efforts in improving tool joint pipe thread connection is being directed toward eliminating the last engaged thread twist-off and washout failures.

It is needless to state that with the first experimental steps taken toward increasing weight on bit and at the same time increasing the rotating speed that some pipe trouble was not encountered, but operators soon added weight to their drill collars to equal that used on bit, together with enough extra weight to keep drill pipe in tension and results have been quite satisfactory. Some operators now run as high as 360 ft. of drill collar in 60-ft. sections. It is also interesting to note that these long drill collars are built up without elevator or recessed overshot space, there simply being from 24″ to 36″ of shallow grooves turned on



the straight O.D. of collar at the top end so that rotary slips or overshot slips can take hold.

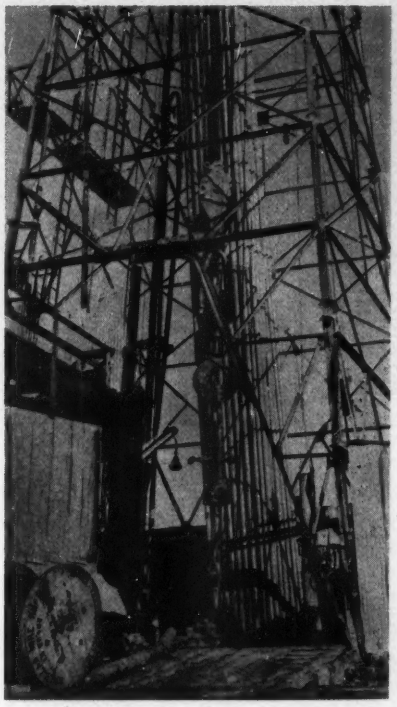
With increased rotating speeds the difficulties and costly fishing jobs resulting from misalignment in some part of the drilling string has made itself more apparent and, in order to assist operators in keeping an accurate check on the straightness of the drill pipe, stem, joints and collars, the Ideal Alignascope has been developed. The Alignascope consists of a telescope and four targets. The targets are firmly strapped at the top of the collar or drill pipe, as the case may be, and a reading taken from the opposite end by means of the telescope. With this instrument the regular drilling crew can quickly survey sections of the drilling string while suspended in the derrick, either when going in or coming out of the hole.

A method of internal inspection of drill pipe to detect cracks, washouts and other potential causes of failure has recently been perfected. The instrument is essentially a telescope of sufficient length to reach through the joint of pipe and consists of a series of special ground lenses and reflectors which allow the inspector a greatly magnified view of the complete 360 degrees of the inside of the pipe.

With operators seeking deeper producing zones, resulting in increased loading, one can readily realize the need for heavier crown blocks, traveling blocks and hooks, and even the advantage of tall derricks, but the need for more power has been subject to some question. At Rio Bravo, with 250-pound pressure boiler plants, operators have drilled the first 10,000 ft. of hole in from 65 to 70 days.

With the introduction of 350-pound pressure boiler plants and adequate equipment to make use of the power, operators have drilled 10,000 ft. in 30 days. It is requiring on an average of six to 10 days to drill to 4000 ft.; from 18 to 22 days to drill 8000 ft.; from 30 to 40 days to drill 10,000 ft., and from 50 to 60 days for setting casing at 11,250 ft. A typical Rio Bravo well will require on an average of 50 to 60 bits drilling to 10,000 ft., and the difference in formations is quite noticeable in the varied amount of footage made per bit. The first 4000 ft. will require an average of 10 bits, the next 4000 ft. approximately 12 to 15 bits and the next 3000 ft. approximately 45 to 50 bits. With operators becoming more familiar with formations, a further reduction in drilling time can be expected for the fact remains that there is no criterion or means of predetermining the most satisfactory combination, the best results being obtained from experience and driller's judgment.

To accomplish faster drilling, a number of items are contributing factors, the major ones affecting equipment design being faster hoisting speeds, faster



rotating speeds with greater weight on bottom and an increase in circulating fluid. In comparison to past normal practice, hoisting power has been increased as much as 75%. Power for rotating pipe at higher R.M.P. and greater weight on bit has increased from 75 to 100%, and pump hydraulic horsepower has increased from 50 to 75%, all of which created a need for greater boiler capacity.

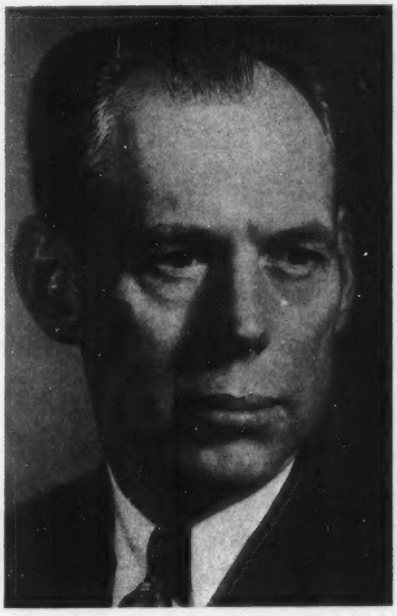
A complete rotary rig is composed of many separate units, all of which are so interdependent upon the function of the other that no great change can be made in one without, to some degree, affecting the performance of the other.

With operators starting an almost overnight trend toward fast rotative speeds exceeding by 100% that of past practise and increasing power consumption, it is quite apparent that some difficult problems have been placed before the manufacturer, designer and metallurgist. The problems are further complicated by the fact that operators in general have set up criterions on the life expectancy of various units which will in some instances be hard to meet with increased loading, because of the fatigueing characteristics of steel.

At present there have been approximately 150 wells in the United States drilled below the 10,000 ft. and 15,000-ft. depths have been attained. Machinery for adequately drilling these depths is available and being improved upon. However, greater depths are anticipated and boiler plants of 500-pound pressure will soon be in service, and their performance will, no doubt, create another sphere of influence on equipment trends and drilling practise.

Company Dividends Decline Dow, Jones Report Shows

Profits of the oil industry have been running about 40% behind last year, but cash dividends on common stocks will run only 25% below 1937, Dow, Jones and Co. reports. The 1937 payments were the largest in history, while this year payments will run only slightly below the 1936 figure. A group of 26 companies will pay out $269,813,000 in cash dividends on common stocks this year, compared with $301,684,000 in 1937 and $291,624,000 in 1936. Ten companies will pay the same this year as last, while the rest will distribute less.



C. D. Gard

The editor kept the honors in the family when he credited the report of the Technical Committee of the CNGA, 2nd Issue, November, to Earle W. Gard. The author of the report, of course, was C. D. Gard, chairman of the Committee and brother of Earle. As the family resemblance extends to responsible positions with the same company, Union Oil Co. of Calif., the editor should not be blamed to harshly for his lapse.

Construction of the exhibit being prepared by the Golden Gate Exposition Petroleum Exhibitors, Inc., is progressing rapidly.

On these two pages are shown scenes which followed completion of Richfield Oil Corp.'s discovery well, Tupman-Western No. 1, Sec. 32-30s-25e, for 3752 bbls. daily. At left: Albert Kelley, vice president; Charles S. Jones, president; Al Donneley, field superintendent. Below H. E. Hoots, chief geologist. Above the drilling crew. The new field is four miles west of Ten Section and one mile east of Elk Hills. The oil is 49° gravity. Hole was bottomed at 8674 ft.

Left to Right: W. T. Dinkins, vice president in charge of sales; M. R. Gross, treasurer; M. E. Norris, production superintendent, Ventura; C. R. McKay; W. T. Autrey, controller; H. H. Kelly, purchasing agent; R. W. Ragland, attorney; Hugh M. Gallagher, personnel manager; A. L. Donneley, field superintendent; H. T. Boggs, in charge of field operations; N. F. Simmonds; Albert Kelley; Frank Morgan, vice president in charge of exploration; R. D. Montgomery, in charge of exploration department; Ray W. Carver, lease department.

Federal Oil and Gas Permits

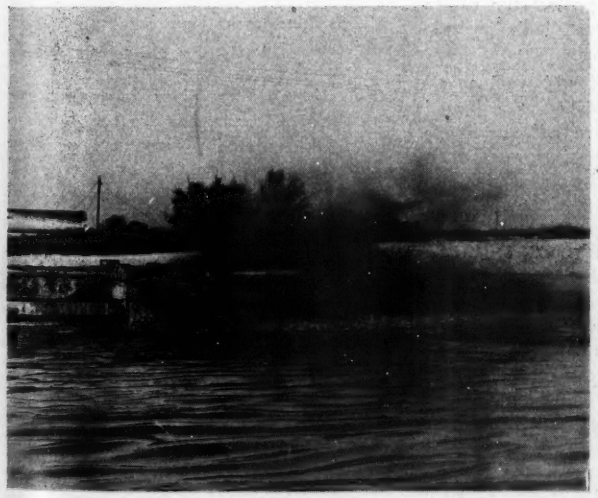
Expire December 31, 1938

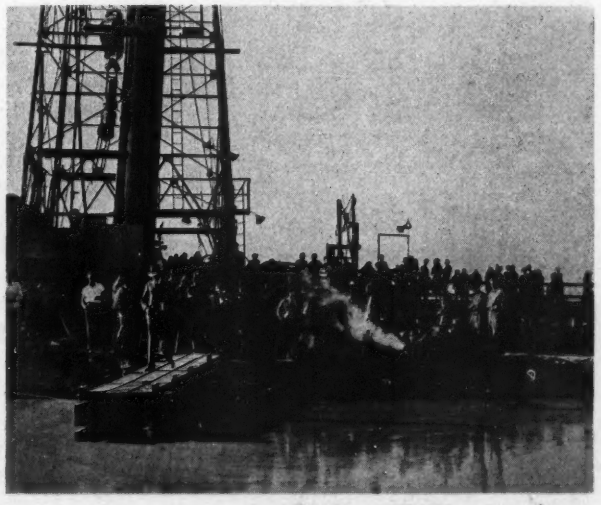
It's the last chance for many California holders of Federal oil and gas permits, many of which automatically expire on Dec. 31, even though they are in good standing. These permits can be exchanged for five-year oil and gas leases, however, if an application is made prior to Dec. 31 to the land office of the district in which the land is located.

With only two exceptions, the lease requirements generally appear to be the same as those of the permits. The two exceptions are the requirement of a $1000 bond to guarantee "lease obligations" prior to drilling, and the annual rental. The bond appears to insure that the lessee will pay rentals and protect surface rights, which seem to be the only lease obligations until drilling actually starts. When drilling starts the lessee must furnish a general lease bond of $5000, as was required of the permitee, at which time the $1000 bond is released.

The rental requirement calls for an annual rental of 50 cents per acre per year for the first lease year and 25 cents per acre per year for subsequent lease years. This requirement is modified, however, when the lease has been taken out in exchange for a permit, in which case rentals for the first two lease years are waived. All leases are for 5-year periods, automatically renewed if oil or gas is discovered, and all leases will date from Dec. 31.

A lease may not be quitclaimed without the consent of the Secretary of the Interior, and then only when all obligations under the lease, even including wages of employees, are settled. If the Secretary refuses to consent, the bondsmen will be liable for continuance of performance. However, the spirit of the lease as to drilling obligations is not severe, as the Federal government seems, by the wording of the lease form, to be interested primarily in drainage and offset wells, rather than in compelling the drilling of wildcats. While there is some fear that the bond conditions are hazardous because of the restrictions on quitclaiming, it appears, from the lease form as a whole, that





permission to quitclaim could be obtained at any time upon evidence that rents, royalties and wages had been paid, that formations had been protected, and that drainage had been prevented by proper offset wells. When the lease is quitclaimed under the above conditions, the bond is, of course, released.

A serious provision of the new lease is the right of the Secretary of the Interior to establish "reasonable minimum prices for purposes of computing royalty in value on any or all oil, gas, natural gasoline and other liquid products obtained from gas; and that in no case shall the price so established be less than the estimated reasonable value of the product, due consideration being given to the highest price paid for a part or for a majority of production of like quality in the same field, to the price received by the lessee, to posted prices and to other revelant matters."

It is this paragraph in Federal leases that caused so much difficulty at Kettleman Hills, where Secretary of the Interior Wilbur established a higher price for government royalty oil than the operators were receiving from their production, and actually established a value based upon the highest prices paid in any California field. rather than a value based upon Kettleman Hills oil itself.

Bonds may be of three types, either (1) corporate surety, (2) two qualified bondsmen, or (3) collateral.

Royalties are on a graduated scale, ranging from 12½% on 50-bbl. production to 32% on production of 2000 bbls. or more per day.

Pertinent clauses of the lease, from the lessee's viewpoint are that the lessee agrees:

"Bond—To furnish prior to the beginning of drilling operations and maintain at all times thereafter as required by the lessor a bond in the penal sum of $5000 with approved corporate surety, or with deposit of United States bonds as surety therefor, conditioned upon compliance with the terms of this lease; and, until such bond is furnished, to submit and maintain a bond in the sum of $1000 with acceptable surety, similarly conditioned.

"Within 30 days of demand, to subscribe to and to operate under such reasonable cooperative or unit plan for the development and operation of the area, field or pool embracing the lands included herein as the Secretary of the Interior may determine to be practicable and necessary or advisable, which plan shall adequately protect the rights of all parties in interest, including the United States.

"Wells—(1) To drill and produce all wells necessary to protect the leased land from drainage by wells on lands not the property of the lessor or lands of the United States leased at a lower royalty rate, or in lieu of any part of such drilling and production, with the consent of the Secretary of the Interior, to compensate the lessor in full each month for the estimated loss of royalty through drainage in the amount determined under instructions of said Secretary; (2) at the election of the lessee, to drill and produce other wells in conformity with any system of well spacing or production allotments affecting the field or area in which the leased lands are situated, provided such system is authorized and sanctioned by applicable law or by the Secretary of the Interior; and (3) promptly after due notice in writing, to drill and produce such other wells as the Secretary of the Interior may require to insure reasonable diligence in the development and operation of the property.

"Rentals.—To pay the lessor in advance for each acre or fraction thereof, a rental of 50 cents for the first lease year beginning on the first day of the month in which the lease issues, and a rental of 25 cents for each subsequent lease year beginning prior to discovery of a valuable deposit of oil or gas within the limits of the geologic structure on which all or part of the leased lands are situated, and one dollar for each lease year beginning on or after such discovery, the rental so paid for any one lease year to be credited on the royalty for the year; Provided, that if this lease is granted in exchange for an oil and gas prospecting permit or pursuant to an application for a prospecting permit filed after May 23, 1935, no rental shall be payable for the first two lease years unless valuable deposits of oil or gas are sooner discovered within the boundaries of the lease, but a rental of one dollar shall be payable, as above provided, for each lease year beginning on or after such discovery; and, Provided further, that when the Secretary of the Interior shall direct or shall assent to suspension of operations or of production of oil or gas under this lease, after a valuable deposit of oil or gas shall have been discovered within the lands leased, any payment of acreage rental prescribed herein likewise shall be suspended during such period of suspension of all operations and production; and this lease shall not be deemed to expire by reason of suspension of prospecting, drilling, or production, pursuant to any order or consent of the said Secretary.

"Royalties, whether in amount or value of production, shall be subject to reduction whenever the average daily production of the oil wells on the entire leasehold or on any tract or portion thereof segregated for royalty purposes shall not exceed ten (10) bbls. per well per day, or where the cost of production of oil or gas is such as to render further production economically impracticable, if in the judgment of the Secretary of the Interior the wells can not be successfully operated upon the royalties fixed herein.

"Payments.—Unless otherwise directed by the Secretary of the Interior, to make rental, royalty or other payments to the lessor to the order of the Commissioner, General Land Office, such payments to be tendered to the Federal

TRU-LAY Preformed ROTARY LINES

● It is when you yank out a string of pipe that you appreciate TRU-LAY Preformed. With TRU-LAY you make much faster round trips and get back into real drilling quicker.

You appreciate TRU-LAY Preformed when you have to replace a line, too. It is easy to handle; faster to reeve; much easier to thread through the traveling block, the crown block and eye in the drum.

There are at least a dozen points of merit about TRU-LAY Preformed that you never really appreciate until you have that remarkable drilling line on your rig. A few of the major ones are listed below. Make sure your next line is TRU-LAY Preformed.

1. Resists whipping
2. Spools perfectly
3. No crushing on drums
4. Resists kinking
5. Easier to handle
6. Is safer to handle
7. No internal stress
8. Lasts longer
9. Cuts replacement costs

AMERICAN CABLE DIVISION
AMERICAN CHAIN & CABLE COMPANY, Inc.
WILKES-BARRE, PENNSYLVANIA
Tunnell, Wood & Neilan, Inc.
2440-46 Enterprise St.,
Los Angeles, California

BUY ACCO QUALITY

A FEW OF THE 137 AMERICAN CHAIN & CABLE INDUSTRIAL PRODUCTS

AMERICAN CHAIN DIVISION
(DOMINION CHAIN COMPANY, Ltd., in Canada)
Weed Tire Chains • Welded and Weldless Chain • Malleable Castings
Acco-Morrow Lubricators

AMERICAN CABLE DIVISION
Tru-Lay Preformed Wire Rope • Tru-Loc Processed Fittings • Crescent Brand Wire Rope
Tru-Stop Brakes • Tru-Level Oil Controllers

ANDREW C. CAMPBELL DIVISION
Abrasive Cutting Machines • Flotormers
Special Machinery • Nibbling Machines

FORD CHAIN BLOCK DIVISION
Chain Hoists • Trolleys

HIGHLAND IRON & STEEL DIVISION
Wrought Iron Bars and Shapes

MANLEY MANUFACTURING DIVISION
Automotive Service Station Equipment

OWEN SILENT SPRING COMPANY, Inc.
Owen Cushion and Mattress Spring Centers

PAGE STEEL AND WIRE DIVISION
Page Fence • Wire and Rod Products
Traffic Tape • Welding Wire

READING-PRATT & CADY DIVISION
Valves • Electric Steel Fittings

READING STEEL CASTING DIVISION
Electric Steel Castings, Rough or Machined
Railroad Specialties

WRIGHT MANUFACTURING DIVISION
Chain Hoists • Electric Hoists and Cranes

In Business for Your Safety

ALL AMERICAN CABLE DIVISION ROPES MADE OF IMPROVED PLOW STEEL ARE IDENTIFIED BY THE STRAND

oil and gas supervisor of the district in which the leased land is situated.

"Regulations.—To abide by and conform to any and all reasonable regulations of the Secretary of the Interior now or hereafter in force, all of which regulations are made a part and condition of this lease; Provided, that such regulations are not inconsistent with any express and specific provisions hereof; and particularly that no regulations hereafter approved shall affect a change in the rate of royalty or annual rental herein specified without the written consent of the parties to this lease.

"Taxes and wages—Freedom of Purchase.—To pay when due, all taxes lawfully assessed and levied under the laws of the State or the United States upon improvements, oil, and gas produced from the lands hereunder, or other rights, property, or assets of the lessee; to accord all workmen and employees complete freedom of purchase, and to pay all wages due workmen and employees at least twice each month in the lawful money of the United States.

"Assignment of Lease.—Not to assign this lease or any interest therein by an operating agreement or otherwise, nor to sublet any portion of the leased premises, except with the consent in writing of the Secretary of the Interior first had and obtained.

"Pipe lines to purchase or convey at reasonable rates and without discrimination.—If owner, or operator or owner of a controlling interest in any pipe line or of any company operating the same which may be operated accessible to the oil or gas derived from lands under this lease, to accept and convey and, if a purchaser of such products, to purchase at reasonable rates and without discrimination the oil or gas of the Government or of any citizen or company not the owner of any pipe line, operating a lease or purchasing or selling oil, gas, natural gasoline or other products under the provisions of the Act."

W. H. Geis Appointed Union Oil Representative

W. H. Geis, Union Oil Company's newly appointed special representative in the field and exploration departments, is a widely-known individual in the petroleum industry. Graduating from the University of California in 1915, he spent some time in the mining business, and was employed as an engineer by various mining interests. His first contact with the oil business took place in 1917, when he joined the firm of Douglas and Moody, consulting geologists at Casper, Wyoming. Since that time, excepting for a brief period of war service, his efforts have been entirely devoted to petroleum geology and related activities. He has engaged in consulting work for many clients in the Rocky Mountain oil field, has surveyed the oil fields of Kentucky, and the possibilities of Missouri, and for a number of years held the position of chief geologist for Consolidated Royalty Oil Company and the Western Exploration Company at Casper. During the seven years he was so engaged, his activities carried him to practically every producing field in the United States. In 1926 he was elected vice-president of the Continental Oil Company, and was instrumental in establishing that company in California. He has organized several petroleum companies, and from 1931-1933 was employed as manager for the Italo Petroleum Company, and managed its affairs until it was returned to the stockholders. He was chairman of the "Code and Allocation Committee" under the N.R.A., and was a member of the small group which, in Washington, drafted the "Supplemental Code" for California. In addition, Mr. Geis has been active on various committees of the American Petroleum Institute, is president of the California Oil and Gas Association, and was recently elected chairman of the petroleum section of the American Institute of Mining Engineers.

W. H. Geis

Employees engaged in crude production in California October 1938 increased .01% over the number in October 1937.

Froome Now Heads A.P.I. Coast Committee

C. W. Froome, of Union Oil Co. of California, Santa Fe Springs, Calif., has been appointed chairman of the American Petroleum Institute's Division of Production California District Sub-Committee on Oil Country Tubular Goods to succeed C. C. Scharpenberg, resigned.

Mr. Scharpenberg, who has retired from service with the Standard Oil Co. of California, is one of the pioneer members of the Institute committees.

Gillies Is Elected A.I.M.M.E. President

Donald B. Gillies, vice-president of the Republic Steel Co. of Cleveland, Ohio, was elected president of the American Institute of Mining and Metallurgical Engineers, by letter ballot of the members as reported by the tellers at the meeting of the Board of Directors recently at the Engineering Societies Building, 29 West 39th St., New York City.

A genius for organization and administration and a Scotch sense of the value of profits caused Mr. Gillies to advance rapidly from one position of responsibility to another throughout his career. His first job—that of pushing slag pots in a new smelter of the Montana Ore Producing Co. was obtained in the depths of the depression of 1893 a few months after he was awarded a degree of Mining Engineer by the Michigan College of Mining and Technology, at Houghton.

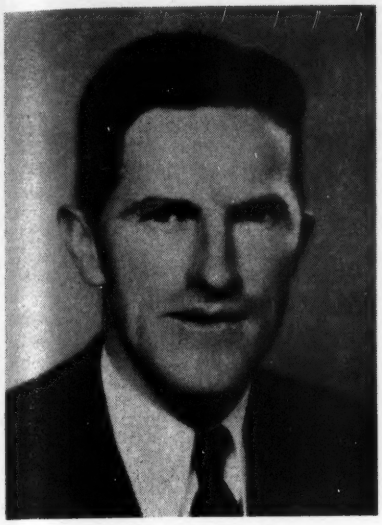
P. H. Jones Chairman New A.P.I. Committee

Appointment of P. H. Jones, of Union Oil Co. of California, Wilmington, Calif., as chairman of the standing Sub-Committee to Study Drilling Fluids of the American Petroleum Institute's Division of Production has been announced by C. E. Reistle, Jr., national chairman of the Topical Committee on Drilling Practice. Members of the new committee, which will be responsible for correcting and revising the code on standard field procedure for testing drilling fluids, are:

G. E. Cannon, Humble Oil & Refining Co., Houston, Texas; **R. D. Copley,** The California Co., Denver, Colo.; M. P. Huntington, Stanolind Oil & Gas Co., Casper, Wyo.; R. W. McIlvain, Jr., The Pure Oil Co., Olney, Ill.; G. A. Poole, Gulf Production Co., Odessa, Texas; H. H. Power, University of Texas, Austin, Texas; G. L. Ratcliffe, Baroid Sales Co., Houston; **W. W. Robinson,** The Texas Co., Long Beach, Calif.; and Harold Vance, Texas A & M College, College Station, Texas.

J. W. Sinclair Heads Union Automotive Department

A recent executive bulletin announces the appointment of J. W. Sinclair as manager of Union Oil Company's newly created automotive department. This



J. W. Sinclair

department will have complete control of all automotive equipment with respect to design, acquisition and maintenance, and all incidental activities, facilities and personnel. It is also charged with the responsibility of administering the use of employee cars on company business, and of establishing schedules of compensation and policies governing such use.

J. W. Sinclair has long enjoyed the reputation of an expert in the various phases of automotive transportation. He is a past president of the Automotive Council of Southern California, is vice-chairman of the American Petroleum Institute's central committee on automotive transportation, and a member of the California State Technical Advisory Sub-Committee on Motor Vehicle Legislation.

Starting out in life with the idea of becoming a lawyer, he studied law for three years, but his preparations for the bar were interrupted by a term of overseas service during the war, and were never resumed. Finishing his education at the University of Illinois, he acquired 5 years of production experience in Mid-Continent oil fields and thereafter joined the automotive staff of Union Oil Company sales department, and in February, 1927, was appointed supervisor of automotive equipment.

During the years that have since elapsed, he has played a large part in the drafting and adoption of the present automotive policies of the Company, and his latest elevation to the managerial post of the new department is in definite recognition of his valuable contributions towards the economical and efficient operation of Union Oil Company's mobile stock.

The Standard Oil Company of California issues the following statement:

The overproduction of crude oil in California has created an uneconomic situation that should be called to the attention of everyone engaged in the oil industry.

United States Bureau of Mines figures showing huge additions of oil to storage fully demonstrates this situation. California is producing more oil than can be sold. This in spite of the fact that a great volume of oil is shut-in.

During the first ten months of 1938, 28,000,000 barrels of crude oil and products were placed in storage. The total addition for the whole year, it is estimated will be 33,000,000 barrels, or an average rate of 90,000 barrels per day.

The Bureau of Mines estimates for December a required production in California of 589,700 barrels per day. Yet the state is producing at the rate of about 666,000 barrels per day.

Various estimates indicate a demand during 1939 of approximately 600,000 barrels per day. Even this contemplates ending the year 1939 with stocks at least as great as at the first of the year. Therefore, if the present rate of crude production is maintained it will mean addition to storage of crude and products during 1939 of at least 24,000,000 barrels.

The foregoing clearly indicates the necessity of immediately bringing production into a close balance with demand. Today some purchasers of crude oil foresee that their storage facilities will be full within a few months. Several buyers are already without storage facilities for certain products.

The industry cannot afford to add more petroleum to storage. The financial burden is too heavy to carry.

Everyone interested in this industry—whether a small company or a large one, whether only a producer, or a refiner, or a marketer, or a company engaged in all phases of the business, should and must recognize that the present unstable condition of the industry must be corrected if we are to avoid a breakdown. The situation is definitely serious and requires immediate action.

New Petroleum Classes By U. C. L. A. Extension

Classes in petroleum engineering, oil geology, and petroleum technology and kindred subjects will be featured in the new schedule of classes which the University of California Extension Division will open during January and February at its 815 South Hill street classroom headquarters in downtown Los Angeles, according to Miss Margaret Wotton, executive secretary. Instructors in the petroleum courses will include William Woods Porter, Glenn Bowlus and Paul F. Devine.

W. E. Sievers Returns From Trip For Security

W. E. Sievers of the Security Engineering Co., Inc., Whittier, Calif., has just returned from an extended business trip through the Mid-Continent and Eastern

W. E. Sievers

states. He has been away a little over a month, his itinerary including stops at Houston, New York and Chicago. In the latter city he attended the A. P. I. convention where he was kept busy answering questions about "Securaloy," the new drillable oil field metal which the Security Engineering Co., Inc., recently developed.

While in Houston, Mr. Sievers inspected final plans for the modern new Security division office, warehouse and manufacturing plant which will be constructed in that city at 5525 Clinton Drive. This new unit will stock and service "Securaloy" pipe and accessories for the Oklahoma, Louisiana, Illinois and Gulf Coast areas, and is expected to be in operation shortly after the first of the year.

E. C. Poe Appointed Vanguard Field Chief

Appointment of E. C. Poe, actively identified with the oil industry of California for many years, to the post of general superintendent of field operations of the Vanguard Oil Co. was announced this week by Cliff Baker, president of Vanguard.

In making the change Mr. Poe stated: "My knowledge of the personnel and the progressive policy of the Vanguard Oil Co. has led to my association with them. I feel that it is a privilege to be identified with this progressive up and coming organization".

PRODUCTION :-: DEVELOPMENT

(Figures of Production and Stocks are in barrels of 42 Gals.)

	Total Production October	—DAILY AVERAGE— Oct., 1938	Sept., 1938	Oct., 1937
Group No. 1				
Belridge—North	393,625	12,698	12,553	16,648
Belridge—South	34,014	1,097	1,179	1,779
Canal	104,006	3,355	2,854	.....
Canfield Ranch	2,916	94	98	.....
Coalinga	276,556	8,921	10,940	15,815
Edison	82,729	2,669	2,555	3,943
Elk Hills	318,992	10,290	10,411	10,963
Fruitvale	240,134	7,746	7,743	8,535
Greeley	87,920	2,836	3,000	2,215
Kern River	356,474	11,499	12,031	15,381
Kettleman Middle Dome	1,118	36	40	101
Kettleman North Dome	1,927,667	62,183	63,468	81,195
Lost Hills	104,012	3,355	3,482	4,145
McKittrick	97,413	3,142	3,362	4,512
Midway-Sunset	1,747,828	56,382	57,331	73,465
Mountain View	285,914	9,223	9,695	17,262
Mount Poso	462,846	14,931	14,811	19,749
Rio Bravo	235,546	7,598	8,152	.....
Round Mountain	403,958	13,031	13,516	15,166
Ten Section	264,458	8,531	8,218	3,031
Wasco	11,691	377	377	.....
Wheeler	9,483	306	310	312
Group No. 2				
Capitan	92,291	2,977	2,897	2,919
Elwood	158,902	5,126	5,236	8,315
Rincon	106,114	3,423	3,515	3,599
San Miguelito	87,376	2,818	2,295	3,570
Santa Barbara	11,926	385	380	574
Santa Maria	570,391	18,400	19,580	13,764
Summerland	1,416	46	32	34
Ventura Avenue	1,064,298	34,332	34,237	34,706
Ventura-Newhall	170,477	5,499	5,313	5,107
Watsonville	930	30	30	60
Group No. 3				
Brea-Olinda	176,859	5,705	5,598	6,151
Coyote—East	100,943	3,256	3,289	3,955
Coyote—West	247,970	7,999	8,105	7,056
Domingues	807,889	26,061	25,059	29,297
El Segundo	182,350	5,882	6,499	21,818
Huntington Beach	979,585	31,600	31,208	36,275
Inglewood	418,458	13,499	13,752	16,137
Lawndale	2,176	70	64	89
Long Beach	1,690,985	54,548	55,964	57,788
Los Angeles-Salt Lake	17,750	573	570	574
Montebello	437,608	14,116	12,394	7,871
Playa Del Rey	183,944	5,934	5,727	7,789
Potrero	18,610	600	678	389
Richfield	270,596	8,729	8,820	9,015
Rosecrans	434,508	14,016	14,248	4,218
Santa Fe Springs	938,756	30,283	31,536	41,365
Seal Beach	249,590	8,051	8,118	9,419
Torrance	619,685	19,990	19,542	7,223
Whittier	28,277	912	957	888
Wilmington	2,903,218	93,652	92,356	60,299
Total	20,423,178	658,812	664,065	694,481
September	19,921,957	664,065		
Decrease (*Increase)	501,221*	5,253		

SUMMARY OF CALIFORNIA OILFIELD OPERATIONS FOR OCTOBER, 1938, HELD IN PACIFIC COAST TERRITORY BY CALIFORNIA OIL COMPANIES

	Oct. 31, 1938	Sept. 30, 1938	October Changes	Dec. 31, 1937 Reclassified
1. Gasoline-Bearing Crude	34,766,423	33,594,928	+1,171,495	29,417,842
2. Non-Gasoline-Bearing Crude	17,144,854	17,562,544	− 417,690	14,384,000
3. Unblended Nat. Gas	3,038,914	3,402,834	− 363,920	2,001,204
4. Gasoline (not including distributing and service stations)	12,506,153	11,663,318	+ 842,835	13,520,678
5. Naphtha Distillates	1,383,671[1]	1,352,247[1]	+ 31,424	1,464,577[1]
6. Gas Oil and Diesel Oil	10,878,753	10,886,653	− 7,900	8,648,990
7. Fuel Oil Residuum	70,190,421	69,059,522	+1,130,899	54,145,388
8. All Other Stocks	5,413,051	5,715,707	− 302,656	4,457,568
TOTAL	155,322,240	153,237,753	+2,084,487	128,040,247
[1]Estimated amount of unfinished gasoline contained in item 5	1,162,298	1,124,050		1,248,291

	New Rigs Up	Active Drilling	Producers Completed	Daily Initial Output	Active Producing	ABANDONED WELLS Drillers	Producers
Group No. 1							
Belridge—North	2	4	2	2,856	63	....	....
Belridge—South	..	....	....	....	86	....	....
Canal	1	3	1	3,330	13	....	....
Canfield Ranch	..	....	....	....	1	....	....
Coalinga	6	4	2	11,150	812	5	....
Edison	..	2	....	....	87	....	....
Elk Hills	..	....	....	....	167	....	....
Fruitvale	1	....	1	280	173	....	....
Greeley	..	4	....	....	16	....	....
Kern River	2	4	1	18	1,357	....	....
Kettleman Middle Dome	..	....	....	....	3	....	....
Kettleman North Dome	1	8	2	8,832	213	....	....
Lost Hills	1	1	1	145	236	....	....
McKittrick	..	....	2	343	179	....	....
Midway-Sunset	2	2	2	78	2,441	....	2
Mountain View	..	1	....	....	184	....	....
Mount Poso	3	2	3	379	267	1	1
Rio Bravo	2	6	2	4,470	18	....	....
Round Mountain	3	2	3	445	205	2	....
Ten Section	..	1	2	2,735	33	....	....
Wasco	..	3	....	....	2	....	....
Wheeler Ridge	..	1	....	....	27	....	....
Group No. 2							
Capitan	..	....	....	....	46	....	....
Elwood	..	....	....	....	80	....	....
Rincon	..	1	1	60	48	....	....
San Miguelito	1	....	2	2,735	18	....	....
Santa Barbara	..	....	1	30	33	....	1
Santa Maria	1	4	....	....	300	....	....
Summerland	..	....	....	....	18	....	....
Ventura Avenue	4	8	1	1,861	230	....	....
Ventura-Newhall	1	9	2	1,011	558	....	1
Watsonville	..	....	....	....	7	....	....
Group No. 3							
Brea-Olinda	..	2	....	....	342	....	....
Coyote—East	2	1	....	....	86	....	....
Coyote—West	..	....	....	....	56	1	1
Domingues	..	2	....	....	202	....	....
El Segundo	..	....	....	....	56	....	3
Huntington Beach	4	4	....	....	551	....	....
Inglewood	..	....	....	....	200	....	....
Lawndale	..	....	....	....	6	....	....
Long Beach	2	4	....	....	1,266	....	....
Los Angeles	..	....	....	....	112	....	1
Montebello	..	5	6	4,675	219	....	1
Newport	..	1	....	....	....	....	....
Playa Del Rey	..	....	....	....	187	....	1
Potrero	..	1	....	....	12	....	....
Richfield	..	1	....	....	294	....	1
Rosecrans	4	8	4	4,742	108	....	....
Santa Fe Springs	1	....	....	....	593	....	4
Seal Beach	..	....	....	....	110	....	....
Torrance	18	15	31	9,065	645	....	2
Whittier	..	....	....	....	138	....	....
Wilmington	10	7	16	8,360	579	....	....
Miscellaneous Drilling	10	40	....	....	....	6	....
Group No. 4—Gas Fields							
Buena Vista Lake	..	....	....	....	1	....	....
Buttonwillow	..	....	....	....	5	....	....
Chowchilla	..	....	....	....	....	....	....
Delano	..	....	....	....	....	....	....
Dudley Ridge	..	....	....	....	....	....	....
Goleta	..	....	....	....	....	....	....
McDonald Island	..	....	....	....	4	....	....
Rio Vista	1	1	....	....	14	....	....
Semi Tropic	..	....	....	....	1	....	....
Tracy	..	....	....	....	....	....	....
October	83	162	88	67,600	13,708	15	19
September	96	206	69	53,310	13,590	15	33
Decrease (*Increase)	13	44	19*	14,290*	118*	....	14

THERE'S A YOWELL TOOL FOR EVERY WELL WASHING JOB!

Yowell well washing tools are designed to cover every phase of pressure and suction well cleaning operations! They are used successfully by prominent oil companies everywhere for:

Washing perforations to increase production
Checking gun or mechanical perforation jobs
Washing out cavities for cementations
Spotting chemicals behind casing
Locating holes in the casing
Spotting oil and washing liners loose
Opening perforations before running water locators
Conditioning shot holes for better results

YOWELL PRESSURE AND SUCTION PERFORATION WASHERS

These tools will not only open all types of liner perforations for increasing production, but can be used to perform any of the operations described above! **They require only the regular well pulling equipment,** and can be run on either tubing or drill pipe.

When washing wells with these tools, certain information can be obtained concerning the subsurface condition of the hole, such as whether the perforations were found open, whether closed perforations were opened, or whether the closed perforations were found too tightly packed to be opened. Such information largely determines the extent of remedial work to be done, and often eliminates unnecessary expense in reconditioning the well. In any case, before undertaking costly remedial work, wash your well with a Yowell Washer **and be certain as to the condition of your perforations!**

YARBRO VACUUM WELL CLEANER

Vacuum Well Cleaners are essentially pump action suction tools, run on either tubing or drill pipe and operated by raising and lowering the run-in string. These tools have repeatedly demonstrated their ability to remove heavy fluids from the hole in much faster time than with ordinary bailing methods. Foreign material is pulled through the perforations by the strong vacuum action of the pistons and then **completely removed from the hole through the run-in string** as the piston is lifted and lowered. You can be positively certain that each foot of the perforated area has been subjected to a thorough washing, since the well is washed by raising the tool in two foot stages—the length of the area between the packers.

The most thorough cleaning job possible can be obtained by first washing the perforations with a Yowell Pressure Washer and then running a Vacuum Well Cleaner to completely remove all inert material from the well. **Heavy solutions can be pumped from the hole much quicker with the Yarbro Vacuum Cleaner than they can be removed with conventional type bailers or with hydrostatic or explosion type bailers!**

Yowell well washing tools are thoroughly field tested and proven, and can be used with complete safety on any well. They can be run with equal efficiency on either tubing or drill pipe, and are available in all standard casing sizes. Yowell tools meet every one of your requirements for safety, dependability and economy under all conditions!

Write for complete information!

YOWELL OIL TOOLS

YOWELL SERVICE CO.

Oil Field Specialties

AVENAL ★ SANTA FE SPRINGS, CALIFORNIA, PHONE 43383 ★ BAKERSFIELD

DRIFT INDICATOR SERVICE ★ PERFORATION CLEANING TOOLS ★ MECHANICAL PERFORATORS

C. P. CEMENTERS ★ VACUUM JUNK BASKET ★ OFF BOTTOM CEMENT DUMP

LAUGH THIS OFF

It may sound ridiculous, but **Glen W. Bowes** knows a geologist who has discovered several oil fields, and yet his wife still has to find his hat for him every time he leaves home.

And on this subject, it is a notable fact that few oil men wear hats any more. Which is just as it should be. We would much rather see them going without hats than wearing the kind of hats they would wear if they did wear hats.

Bill Pemberton, incidentally, tells us that a certain production man was obliged to eat his hat after the Notre Dame-U.S.C. game.

When we returned from the golf course on Saturday, we asked the little woman if she had listened in on the Notre Dame-U.S.C. game, and in evident surprise, she replied, "No. Who are they playing?"

Now comes **Ted Miles** looking fit and healthy, and remarking how he lies awake half the night thinking how he used to suffer from insomnia.

In spite of the fact that they kept a cat in the pump station, they were still bothered with mice, and one of the boys, consequently, brought out a mouse trap. This, says **Harry Lee,** so humiliated the cat that he left and hasn't been seen since.

Which just shows that animals have feelings the same as pumpers. Not long ago a Whittier oil man shot a pistol into the air to scare a dog away from his chicken pen. The dog was so sore about it that he tore up the whole length of the street.

There may be no truth in this story, but **Jerry Rusk** vouches for the fact that a Long Beach rig builder borrowed ten bucks from his foreman, and is not allowed to do any of the dangerous work.

"I don't like the guy, he has an air of braggadocio about him," sez the first rousty, and the second one replies, "Yeah, he used to work at a packing plant."

And says the production foreman to the pumper, "Your work is very slovenly." "Thank you," pipes the latter, "That's the first time anybody around this joint has ever said a kind word to me."

Out at an intercompany softball game the other night we were sitting next to a girl whose boy friend was evidently performing on one side or the other. "That's Jimmy pitching," she finally yelled. "Watch him. He can hit their bats no matter where they hold them."

Personally, we have always thought softball pitchers were an underhanded lot.

"How's your car, now?" **Max App** asked one of his boys, and you could have knocked him down with an aluminum liner when the latter replied, "Oh, it's a bit run down, but its appetite is still good."

During a local A.P.I. meeting a somewhat irascible speaker was holding forth, "It's nothing but gross ignorance," he thundered, "and gross ignorance is 144 times as bad as ordinary ignorance."

Bill Roper was stranded in one of these little oil towns that had seen better days, when an old fellow came along the street. Bill hailed him and asked if there were any trains running out of the place. "Well," mused the old boy, "The paper says there's one a day, but you know how them papers exaggerates."

And we are happy to report that the Santa Fe Springs oil worker who disappeared for a week has been found. **Jess McClocklin** tells us he was just waiting his turn at one of the municipal golf courses.

With which we again conclude. Remember that there are more men interested in vice than versa.

And there can be no world peace until we beat our swords into plowshares, and our hit and run drivers into unconsciousness.

BAKER

The Big Idea in Successfully Cementing Casing is to use equipment which provides in perfect balance the three important features of . . . STRENGTH, VALVE EFFICIENCY and DRILLABILITY.

State Drilling Report

NEW WELLS

Field	Company	Well	No.	Sec.	Twp.	Range
Rosecrans	Wilshire Oil Co., Inc.	Leitch	1	18	3S	13W
	J. L. O'Donnell		46	19	3S	13W
	Union Oil Co.	Rosecrans	28 & 29	19	3S	13W
	Royalty Service Corp., Ltd.	Gordon	3	19	3S	13W
	Hydrocarbon Products, Inc.	Duchess	1	19	3S	13W
Torrance	J. E. Pettijohn	Marilou Oil Co.	1	23	4S	14W
	The Superior Oil Co.	Torrance	65	25	4S	14W
	A. & T. Oil Co.		2	23	4S	14W
	Ray W. Wilson	Wilson	1	23	4S	14W
	Kern Petroleum Corp.	Madden	1	23	4S	14W
	Louisiana Oil Co.		2	23	4S	14W
	J. L. O'Donnell	O'Donnell-Oakley	44	30	4S	13W
Huntington Beach	Southwest Exploration Co.	State	3, 4, 5 & 6	10	6S	11W
Coyote Hills	Shell Oil Co.	Du Bois	1	22	3S	9W
Whittier	H. & C. Oil Co.	Joyce	1	22	3S	11W
Montebello	Union Oil Co.	Howard & Smith	4	2	2S	12W
Rincon	C. C. M. O. Co.	Hobson	B-18	17	3N	24W
Ventura	British American Oil Prod Co.	Hartmann	7	22	3N	23W
	Tide Water Assoc. Oil Co.	Hartman	8	22	3N	23W
Sespe	H. A. Ivers	Kentuck	14	1	4N	20W
Santa Barbara Co.	Oil Group, Inc.	Hyland	1	16	4N	26W
Colusa Co.	Empire Oil & Gas Corp.	Seaver	1	15	15N	4W
Dominguez	Shell Oil Co.	Reyes	97	33	3S	13W
Buttonwillow Gas	Seaboard Oil Co. of Del.	Kern	7	5	28S	23E
Belridge	Tide Water Assoc. Oil Co.		23	22	27S	20E
Round Mountain	Richfield Oil Corp.	Olcese	2	17	28S	29E
Kettleman North	Standard Oil Co.		74	17	22S	18E
	Standard Oil Co.		81	19	22S	18E
Coalinga	Standard Oil Co.		1	17	20S	16E
	Standard Oil Co.		71	13	20S	15E

DEEPEN OR REDRILL

Dominguez	Shell Oil Co.	Reyes	11	34	3S	13W
Torrance	Woolner Oil Corp., Ltd.		2	23	4S	14W
	Wilton Oil Co.		4	22	4S	14W
	Standard Oil Co.	Marble 1	2	15	4S	14W
	William P. Andrews		10	23	4S	14W
	D. & W. Oil Co.	Lomita	4	23	4S	14W
	Star Petroleum Co.	G & A	1	23	4S	14W
Huntington Beach	Tide Water Assoc. Oil Co.	Miley-Keck	10	34	5S	11W
Rosecrans	Barnsdall Oil Co.	Rosecrans	5	20	3S	13W
Long Beach	L. D. Uhlman & S. V. Edwards	Noll	4	29	4S	12W
	J. E. O'Donnell	Wilson	1	29	4S	12W
	Italo Petroleum Corp.	Fairchild	1	19	4S	12W
Montebello	V-8 Oil Company	M. B.	1	2	2S	12W
Richfield	T. W. Cooke Drilling and Service Co.	Cooke	1	36	3S	9W
Ventura	Tide Water Assoc. Oil Co.	McGonigle	12	23	3N	23W
	Bolsa Chica Oil Corp.	Louis Hartman	6	22	3N	23W
Sunset	R. & W. Co.	Francis	4	6	11N	23W
Fruitvale	Western States Pet. Co.	Unruh	1	21	29S	27E
Poso Creek	Tide Water Assoc. Oil Co.		8	4	28S	27E
Mountain View	Hogan Petroleum Co.	Porter-Day	8	29	30S	29E
	Mohawk Petroleum Corp.	Clendenen	4	30	30S	29E
Kern River	Calif. Star Oil Co.		2-80	22	28S	27E
Seal Beach	Trinity Oil Corp., Ltd.	Judson	2	3	5S	12W
Los Angeles Co.	Numac Oil Co.	Roland	1	14	2S	10W
Richfield	Mid-Center Oil Co., Ltd.	Dorsey	1	28	3S	9W
Kettleman North	Standard Oil Co.		2	11	22S	17E
	K. N. D. A.		63	28	21S	17E
Midway	Honolulu Oil Corp.		78	8	32S	24E
Greeley	Standard Oil Co.	Ross	1	20	29S	26E
	Standard Oil Co.	Fleishauer Comm.	3-2	20	29S	26E

ABANDON

Long Beach	W. O. Dye	Dye	5	24	4S	13W
Wilmington	Tide Water Assoc. Oil Co.	Banning	1	29	4S	13W
Huntington Beach	Apex Petroleum Corp., Ltd.	Harper	1	36	5S	11W
Torrance	The Texas Co.	Carlson	2	14	4S	14W
Playa Del Rey	Fiske & Curtis	Cerrito	4	21	2S	15W
	Star Petroleum Co.		V-1	21	2S	15W
El Segundo	Pacific Western Oil Corp.	Goodwin	1	7	3N	14W
Coyote Hills	Shell Oil Co.	Herriman	1	22	3S	9W
Santa Barbara Co.	General Petroleum Corp.	La Laguna	1	6	7N	30W
	Continental Oil Co.	La Laguna	2	25	8N	31W
Devils Den	Amerada Petroleum Corp.		4	17	26S	19E
Kern Co.	Federal Drilling Co.	Bass & Goodknight Glide	4	13	26S	27E
	101 Oil Co.		1	7	10N	19W
Edison	General Petroleum Corp.	Knapp	7	24	30S	29E
Round Mountain	Brown-Saffold Drilling Co.	Newberry	2	32	28S	29E
Wasco	Standard Oil Co.	K. C. 8-B	1	17	27S	24E
Sunset	R. & W. Co.	Francis	4	6	11N	23W
Kern River	S. O. Reid		1	34	28S	28E
Colusa Co.	Amerada Petroleum Corp.	Calif. Lands Colusa	1	34	16N	1W

Summary	Week Ending Dec. 3	Previous Week	To Date This Year	To Date Last Year
Total New Wells	10	24	1067	1492
Total Deepened or Redrilled	12	18	726	643
Total Abandoned	9	10	472	495

Vernon

PUMPING UNITS SET A NEW STANDARD IN ECONOMICAL PUMPING

LOW FIRST COST

Exceptionally long stroke, sealed roller bearings and highest-quality reduction gears—features usually found only on expensive units—are standard equipment on VERNON Pumping Units *which sell for less than ordinary types.*

LOW OPERATING COST

Perfect balance and a wide range of stroke lengths and speeds assure a smoothness of operation that materially reduces power, rod and tubing costs.

LOW MAINTENANCE COST

Advanced design and the use of highest-quality materials throughout, provide unusually low maintenance costs for VERNON Pumping Units even in the most severe oil field service.

Twin-Crank VERNON Pumping Units are available in 10,000, 15,000 and 22,000 pound A.P.I. ratings; Single Crank Units in 7500 and 10,000 pound ratings. Send for descriptive literature and prices.

VERNON TOOL CO., LTD.
2740 EAST 37TH STREET, LOS ANGELES, CALIF

Presenting a Few Units of . . . .

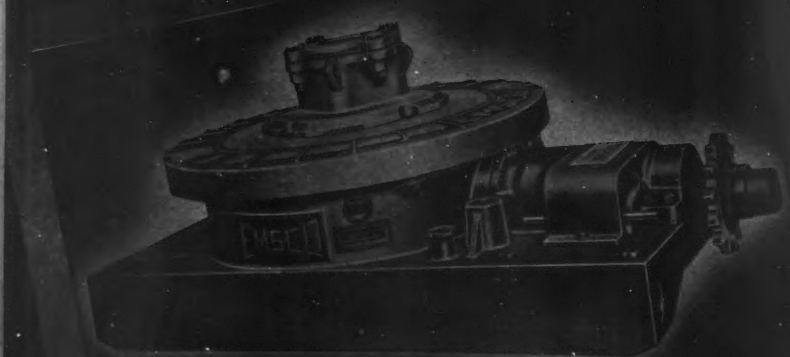
A FULL LINE

OF EQUIPMENT TO MEET EVERY DRILLING NEED

...BEARING THE NAME

EMSCO

AND DISTRIBUTED IN CALIFORNIA EXCLUSIVELY BY



Emsco Type JBS-20½" Rotary Machine

● Descriptive Bulletins Available upon Request

THE REPUBLIC OF CALIFORNIA

STORES IN ALL PRINCIPAL CALIFORNIA OIL

EMSCO
EMSCO
EMSCO
EMSCO
EMSCO
EMSCO
Emsco Type F Rotary Swivel
Rotary Chain (All Types)
UPPLY COMPANY
Emsco Type A-400-46
Totally Enclosed, Flood
Lubricated Draw Works.
Eight-speed. Portable.
Powered by two internal
combustion engines.
EMSCO
EMSCO
Emsco Type FDM-36 Draw Works

Field Development

San Joaquin Valley

Richfield Oil Corp. Discovers High Pressure Field

With an initial flow of 3752 bbls. of 48 gravity clean oil and 18,000,000 cu. ft. of gas, Richfield Oil Corp. brought in its Tupman-Western No. 1 as the discovery well of a great new San Joaquin Valley field. The well is located in the northwest quarter of sec. 32, 30-25, near the center of a 6,000-acre block of leases held by the company. It is only a mile east of Standard Oil Co.'s shallow production in the old Elk Hills field.

Mechanically, the well was finished at 8677 ft. with 8⅝-in. casing cemented at 8406 ft. and with 334 ft. of steel liner, including 280 ft. of perforations, landed on bottom.

Because of the high gas-oil ratio, the well was allowed to flow only two days, being killed on Nov. 29. The last production on that date was 320 bbls. in 20 hours, 48.4 gravity and 1,500,000 cu. ft. of gas through a 1/64-in. bean. Pressures reached dangerous heights at 2800 lbs. on the tubing and 2900 lbs. on the casing head. Although a portion of the "gas cap" was cased off, too much is yet open and the company will attempt to obtain the favorable ratio of the other deep valley floor fields. This is the fifth discovery of Stevens zone production in less than three years.

Tide Water Seeks Grapevine Production

Seeking commercial production in the much-prospected Grapevine area, Tide Water Associated Oil Co. is drilling Southern Pacific Land Co. No. 2 in sec. 15,11-19. Now below 4000 ft. in depth, the well is located north of the Reserve wells in sec. 33.

The Petrol. Corp., Reserve-Petrol No. 33-5 is standing idle at 6988 ft.

New Wells Projected For Wasco Field

That the recent abandonments of Continental and Standard will not result in a complete stoppage of development in the Wasco field is seen in the latest moves of both companies.

Continental Oil Co., which has just finished abandoning KCL A-3-8, has already started work on No. A-4-8 while Standard Oil Co. is preparing to drill Mushrush No. 2 and has staked a location for KCL No. 8-B-2, the latter in sec. 17, south of the Continental wells.

Texas Wildcat Regains Old Bottom

Camp-West-Lowe No. 1, The Texas Co.'s Northwest Fruitvale wildcat in sec. 7, 29-27, has regained the old bottom of 10,122 ft. after many weeks of fishing and sidetracking. The well having already passed through the known producing horizons of this part of the valley, it is believed the company plans to carry the hole to the basement for valuable geological information. A volcanic rock is said to have been penetrated near bottom.

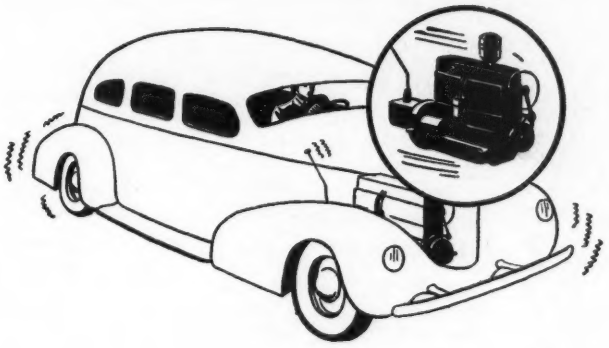
SAN JOAQUIN VALLEY WILDCATS

Area	Well	No.	Section	Depth	Status
	Fresno County				
Coalinga	American Oil Fields, Inc.	1	16, 19-15	250	Idle
	Foreign Oil Co., Bush	1	6, 21-15		Rig
	Jarvis, Leo P.	2	14, 20-14	150	Idle
	Progressive Oil Co.	3	20, 19-15	50	Idle
	Stuart Oil Co., Stuart	1	12, 21-14	1175	Drilling
	Tide Water Assoc. Oil Co., Fleishacker	1	1, 19-15	6710	Drilling
Jacalitos Hills	Dauphin Dev., Ragan	1	30, 21-14	4425	Drilling
Mendota	Pierce, Cyrus, Shorb	1	16, 14-12	1580	Drilling
	Kern County				
Belridge	General Pet. Corp., St. Helens	2	12, 28-20	1388	Pumping
Buttonwillow	Calif. Explor. Co., Salisbury	1	7, 29-24	9115	Drilling
Canal	Shell Oil Co., KCL	B-87	4, 30-25	9869	Drilling
Devils Den	Gibson Oil Co., Alferitz	3	14, 25-18	1230	Testing
	Goodrum, Geo., Baron	1	24, 25-18	1210	Idle
Dominion	Master Pet. Co., U. S.	1	34, 26-28	825	Idle
Edison	Hillview Oil Co., El Tejon	1-A	27, 30-30		Location
	Renner & R.H.L. Oil Co.	1	27, 30-30	2275	Drilling
Elk Hills	Richfield Oil Corp., Tup. W	1	32, 30-25	8677	Testing
Famosa	Shell Oil Co. KCL	A-58-8	8, 27-26	9100	Drilling
Fruitvale	The Texas Co., C.W.L.	1	7, 29-27	10122	Drilling
Grapevine	Petrol Corp., Reserve	33-5	33, 11-19	6988	Idle
	Richfield Oil Corp.	KCL-1	28, 11-20	8713	Drilling
	Tide Water Assoc. O. Co., S.P.	2	15, 11-19	4083	Drilling
McClung	Superior Oil Co., KCL	12	3, 30-26	8110	Drilling
McVan	Barnhart-Morrow, Cons.	1	34, 27-27	2145	Abandoned
	Gilstrap, F. M., Carter	1	7, 27-27	350	Drilling
Mt. Poso	Federal Drilling Co.	4	13, 26-27	2096	Abandoned
	Violette, Milburn	1	27, 26-28	1415	Testing
Midway	Fried, Julius	1	34, 32-24	5031	Testing
Strand	Continental Oil Co.	E-1	17, 30-26	8575	Abandoned
Union Ave.	Richfield Oil Corp., Union Ave.	1	6, 30-28	8340	Drilling

THERE'S A

QUICK STARTING MOTOR

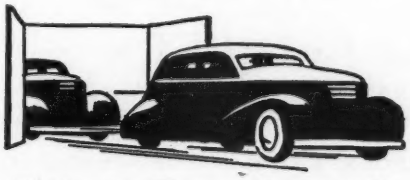
HIDING IN YOUR CAR



Every car has *two* winter motors—one that's lazy, sluggish—one that's alive, quick on the trigger. Associated Aviation Ethyl gasoline gives you that ONE that starts instantly and stays started—regardless of temperature.

Aviation Ethyl gives you split second starting because it's refined after rigid aircraft specifications. Its dry vapor gets to the cylinders faster in ready-to-fire form.

MAKE THIS TEST



Put in a tankful of Associated Aviation Ethyl today. Then see for yourself—in your own car—how easy winter starting becomes when you take advantage of a true aviation fuel (the only true aviation fuel available to western motorists). Fill up with Aviation Ethyl at your neighborhood Smiling Associated Dealers' today.

YOU'LL BE MAKING A CHANGE TO THAT BETTER MOTOR WHEN YOU CHANGE TO

ASSOCIATED AVIATION ETHYL

TIDE WATER ASSOCIATED OIL COMPANY

Angle Deepens Claflin No. 2

D. D. Angle, deepening his lately acquired Claflin No. 2 well in the southeast corner of sec. 10, 27-27, is reported as below 2750 ft. It is planned to test the Vedder zone from which production should be obtained in this location.

Frank M. Gilstrap of Los Angeles took the Carter lease in sec. 7, 27-27 and is drilling his first well in the southeast quarter of the section.

South of McVan and east of Premier, Barnhart-Morrow Consolidated abandoned Smith No. 1 at 2145 ft. after locating the top of the Chanac at approximately 1900 ft.

F. M. Pottenger, a Los Angeles M.D., returned to the north Poso area where his Girard No. 1, sec. 35, 25-28, encountered granitics at 600 ft. The doctor's next test will be Villard No. 2 in sec. 2, 26-28. His three previous trys, Orcier No. 1, Villard No. 1 and Girard No. 1, sec. 3, 26-28, all found the basement at shallow depths.

Milburn Violette, former Michigan operator and now of Laguna Beach, drilled his first Valley well in sec. 27,26-28, coring 20 ft. of oil sand in the lower Vedder zone. The well is being completed after cementing 8⅝ in. casing on bottom and gun perforating.

Edward A. Kelly of Bakersfield is drilling his first Dominion well under the Vendome Oil Co. in sec. 28,26-28, west of the Violette well.

Failing to find production in the area pioneered by Ring Petroleum Co., Western Exploration Co. abandoned Hyde No. 1 in barren Vedder sand at 1850 ft. Drilled by Ring, only three days were required from spudding to abandonment. In the northeast corner of the northwest quarter of the same section, 32-26-28, Ring Oil is drilling its Shapiro No. 5.

Producing both Jewett and Vedder zones, Shell Oil Co. finished Freeman No. 20 with a potential of 360 bbls. Located in sec. 20,28-29 in the Round Mountain field, perforations are open from 1390 to 1865 ft. and from 1915 to 1920 ft. In sec. 17, 28-29, Richfield Oil Co. abandoned Olcese No. 2 at 2150 ft. while in sec. 9,28-29, Eastmont Oil Co. is drilling No. 9-28.

Richfield Tests Hold Interest

Beside the Tupman-Western No. 1 discovery well, Richfield Oil Co. has two other wells in the San Joaquin Valley lime light.

KCL No. 1, deep edge test of the Wheeler Ridge field, has found several potential oil horizons to 8887 ft. but formation tests, so far, have indicated only the sands from 8518 to 8713 ft. to be capable of production. A test of that interval, open one hour, recorded 75 stands of fluid, half of which was 40 gravity oil.

Southeast of Bakersfield in the Union Avenue area, Richfield Oil is drilling below 8300 ft. Interest is stimulated in the well by the company's refusal to release detailed information.

Buttonwillow Test Drills at 9100 Ft.

After quickly recovering from what at first seemed to be a serious fishing job, California Exploration Co. is drilling and coring again below 9100 ft. in its California Lands - Dougherty - Salisbury No. 1. The well is an exploratory project located in sec. 7, 29-24 southeast of the Buttonwillow gas field.

Two Shell Wildcats Drill in Valley

Shell Oil Co., always active in exploration work, has two deep wildcats drilling in the Valley.

from the days of the CLIPPERS

Since 1856 . . . when the majestic clippers sailed the blue waters of the Pacific . . . the name of TUBBS has stood for dependability in rope. Just as true today, Tubbs Marine grade oilwell cordage is recognized for its extra strength, its longer wearing qualities, its ease of handling. Be sure you specify it by trade name for every use in the field.

EXTRA SUPERIOR MANILA
MARINE GRADE OILWELL CORDAGE

Distributed by
CLARKE-WALL, INC.
TUNNELL, WOOD & NEILAN, INC.

TUBBS ROPE

TUBBS *Cordage Company*
200 BUSH ST., SAN FRANCISCO
Mills in San Francisco

California OIL WORLD NEWS SERVICE

...the outstanding scouting and news service of the... Western Petroleum Industry

ADVANTAGES include:

A Complete Index. A Report on New Operators and Incorporations, giving location, progress of development, field and executive personnel and where they can be reached. ***A Drilling Summary of New, Redrilled and Abandoned Wells,*** showing the exact location and carrying a week-by-week as well as a yearly comparison. ***A Production Report*** showing the established daily quota as against the daily actual production for every producing field in the state. ***A Complete Drilling Report*** giving detailed information on each active well in the state, showing casing progress, actual depth, formations and the drilling operations that are in progress. ***A New Location Report*** giving surveyed locations of all the new wells during the week. ***A Completion Report*** giving detailed information on all the completions during the week. ***Large Printed Maps*** covering new fields and fields which are creating interest because of the discovery of deeper sands, or for any other reason.

CALIFORNIA OIL WORLD NEWS SERVICE

536 PETROLEUM SECURITIES BUILDING • PHONE RICHMOND 2136

MAIL THE COUPON BELOW. DON'T WAIT ANOTHER DAY FOR THIS VALUABLE INFORMATION...!

We would like further information regarding your News Service covering:
☐ COMPLETE CALIFORNIA REPORT ☐ SOUTHERN CALIFORNIA REPORT ☐ NORTHERN CALIFORNIA REPORT ☐ DAILY REPORT

Name_____

Company_____

Address_____

City_____ State_____

Northwest of Canal, the company's KCL B-87-4 is seeking the Vedder sand near the 10,000 ft. level having already found the Stevens zone barren. Location is in sec. 4, 30-25.

Near Famosa in sec. 8, 27-26, KCL A-58-8 is drilling below 9234 ft. in what is reported to be Eocene formation. Only occasional light shows have been encountered.

R. S. Lytle Completes Two in E. Coalinga Eocene

R. S. Lytle, operator of the former Petroleum Securities Co. properties, completed two more phenomenal wells in the East Coalinga Eocene Pool. The first, No. 31-18F located in section 18, 20-16, penetrated 512 ft. of the "brown sugar" Gatchell sand to 7470 ft. where the drill entered siltstone. Completed with a top initial flow of 8800 bbls. through a 40/64 in. bean, the well received wide newspaper publicity as a potential 60,000 bbl. producer, an estimate hard to justify on the basis of facts. Before shutting in completely, production was 2500 bbls. per day of 32 gravity clean oil and 1,950,000 cu. ft. of gas through a 16/64 in. orifice.

Lytle's No. 88-7F was the second completion within a week. Located near the east line of sec. 7 offsetting Superior Oil's Hight No. 1, drilling was stopped at 8021 ft. the operator fearing to take the full extent of the sand body lest water be encountered in this structurally low position. With a total Gatchell zone pentration, the well was finished at the initial rate of 4200 bbls. through a 35/64 in. orifice. Production is now being cut back to the low field allowable, the last available gauge being 2016 bbls. of 29.2 gravity oil under 1275 lbs. flow pressure. In the same section, No. 37-7F is drilling at a shallow depth and in sec. 18 No. 71-18F is being rigged up.

Superior Oil Co. is making rapid progress with its important northern outpost, Cagle No. 1 in sec. 6, a late report placing the bottom at 5523 ft. The company's Coalinga Fee No. 2 is standing cemented after picking up the top of the oil sand at 6740 ft.

North of the developed area, Tide Water Associated Oil Co. is drilling Fleischacker No. 57-1, sec. 1, 19-15, below 6800 ft. The operators have been quite successful in withholding detailed information on this test.

Standard Enters Cole's Levee Field

Locating its first well on Kern County Land Co. property in sec. 9,31-25, Standard Oil Co. became the second company to enter the new Cole's Levee field discovered last month by Ohio Oil Co. The test is virtually a wildcat, being situated in the northeast section corner and over a mile northwest of Ohio's producer.

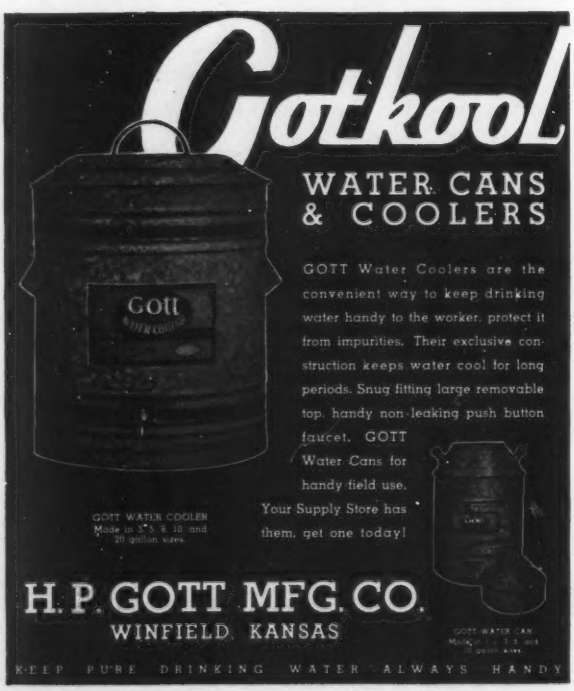
KCL No. F-1, the discovery well, beaned to 2/64 in., is flowing 90 bbls. of 47 gravity oil and 470,000 cu. ft. of gas with 2600 lbs. on the tubing and 2900 lbs. on the casing.

Superior Drills Third at McClung

With characteristic speed, Superior Oil Co. is drilling KCL No. 12, its third test of the McClung area in sec. 3, 30-26. Located near No. 9 which last year appeared for a time to have discovered production at 7600 ft., the new well is already below 8000 ft. heading for the Rio Bravo (Vedder) zone.

Deep Greeley Well Wet on Flow Test

Fleishauer Community No. 2, Standard Oil Co.'s second Rio Bravo zone well in the Greely field, plugged bottom from 11,900 ft. to 11,590 ft. where the well flowed at the rate of 1850 bbls. of oil and 1050 bbls, of water. Water entry was located at 11,560 ft. and the liner is being pulled for further plugging.


Gotkool
WATER CANS & COOLERS
GOTT Water Coolers are the convenient way to keep drinking water handy to the worker, protect it from impurities. Their exclusive construction keeps water cool for long periods. Snug fitting large removable top, handy non-leaking push button faucet. GOTT Water Cans for handy field use. Your Supply Store has them, get one today!
Gott
GOTT WATER COOLER
H. P. GOTT MFG. CO.
WINFIELD, KANSAS
KEEP PURE DRINKING WATER ALWAYS HANDY

Just Say---

YES! You may send me the CALIFORNIA OIL WORLD for one year, for which I enclose $1.00.

For Foreign Countries, $2.00

Name .....

Address .....

City ..... State .....

Position ..... Company .....

Check branch engaged in Producing..... Refining..... Natural Gasoline..... Marketing..... Manufacturing

Subscriptions accepted only from persons actively connected with the oil industry.

California Oil World, 714 W. Olympic Blvd., Los Angeles

Los Angeles Basin

De Soto Oil Co. Tests Signal Hill Deep Zone

Having definitely established the presence of a super deep zone in the Long Beach-Signal Hill field by means of a formation test, De Soto Oil Co. is now endeavoring to determine its productivity. With bottom at 9931 ft. and 7 in. casing cemented at 9760 ft., a drill pipe test recovered a total of 78 stands of fluid, 62 of which were 29.5 gravity oil. Deepened to 10,158 ft., a 5-in. liner containing 396 ft. of 125 mesh perforations was landed and 2½ in. upset tubing run to 9720 ft. After a few hours swabbing, the fluid reached the surface and flowed a short time when the packer, set at 9690 ft., gave way killing the flow. When last reported, the well was being swabbed and was showing considerable life, though in the opinion of some observers, it will be necessary to install a new packer before a consistent flow is obtained.

Should a flowing well not be obtained, neither the prospects of the new zone nor of this particular well should in any way be discounted. Of the 400 ft. of formation now open, 260 ft. is claimed to be oil sand and should this percentage continue for another 400 ft., as many engineers believe that it will, the possibilities are without limit. Those with long memories may recall those days in June and July of 1921 when Shell's discovery well, Alamitos No. 1, just would not behave but would only flow weakly by heads between swabs. They will recall further that the hole was deepened about 300 ft. making the gusher dream a reality. Of utmost significance is the fact that saturated oil sands do underlie the field already world famous for its more than 6000 ft. of productive formations.

Headed for the 10,000 ft. zone in the southeast part of the field is the new well of G. G. Parry & Associates which is nearing 4000 ft. in depth. Located at the corner of 17th St. and Coronado Ave., this test is about a mile from the De Soto well which is on Gundry Ave. north of Burnett St. and adjoins Richfield Oil Co.'s Hass lease, known as the world's richest 10 acres.

L. B. Extension Well Flows 400 Bbl. Rate

Completing its first well in the deep zone of the Long Beach northwest extension area, The Caminol Co., Ltd. brought in Dominguez No. 2-10 flowing initially at the rate of 400 bbls. a day. Bottomed in shale and oil sand at 7536 ft., 7 in. casing was cemented at 7467 ft. Production is clean and tests 28 gravity, an odd circumstance considering that Hilldon Oil Co.' Dominguez No. 1, located only a few feet distant, produces 24 gravity oil from the interval 7705-7786 ft. The new completion will undoubtedly stimulate interest in the area, Rodeo Oil Co., headed by Hal Blair of Beverly Hills, already having taken acreage to the west.

Producer Looms In H. B. Five Points

That the small Huntington Beach Five Points field is to have another producer seems an assured fact as J. E. F. Oil Co. prepares to pump Bruce No. 1, an offset to both its first well and Delaney's old Calnan well. With pipe cemented at 4360 ft. and bottom at 4425 ft. the well appears to be about 30 ft. lower structurally than Schaaf No. 1 but is expected to make the 100 bbl. average maintained by the two wells now on production.

John W. Booth of Inglewood has purchased the derrick used by Apex Petroleum Co. to drill Harper No. 1 and is preparing to skid it northwest in another attempt to extend the little pool.

4th Finger Production Big At West Montebello

Discovery of the fourth finger of the sixth zone in the West Montebello area is not only proving to be a salvation for the field, it is also promising a great future where only two months ago the play was considered to be well past its peak.

Following the lead of Herley-Kelley Oil Operations, the three companies headed by C. A. Doody and associates immediately headed for the new zone. Montebello Reservoir Oil Co. No. 1, already drilling in the upper measures of the Sixth, was carried to 6715 ft., where with 93 ft. of sand open, the well was finished flowing at the rate of 1900 bbls, a day cutting 5% through a one inch bean. Montebello Wesco, Inc. No. 1 was taken off production in the upper Sixth and deepened to the 6700 ft. level where a liner is being run to complete. West Montebello Oil Co. No. 1, third of the group, is milling up the drillable liner landed on the old bottom at 6268 ft. prior to deepening.

V-8 Oil Co. No. 1 well, only a small producer in the upper fingers, was deepened by contractor Wallace Taylor to 6695 ft. where, with 65 ft., open, the project was swabbed in flowing nearly

LOS ANGELES BASIN WILDCATS

Area	Well	No.	Section	Depth	Status
Athens	Entrikin, W. E.	1	7, 3-13	5110	Drilling
Bellflower	Clayton, Geo. L., Scott	1	32, 3-12	6897	Idle
Castaic	Royal Land Corp.	1	8, 4-17	1325	Drilling
Dominguez	Richfield Oil Corp.	1	2, 4-13	5850	Drilling
La Mirada	DHB Oil Co., Heath	1	34, 3-11	6150	Idle
	John McKeon and Assoc. Carmenita	1	21, 3-11	8956	Testing
Mojave	Mojave Pet. Co., Gorman	1	5, 8-18	450	Drilling
	Jennings	2	33, 5-14	260	Drilling
Newhall	Continental Oil Co., Newhall	1	20, 4-17	2371	Drilling
	Mangrum and Page, Lintz	1	4, 3-15	125	Drilling
	Newhall Drlg. Asso., Needham	4	13, 3-16	3505	Cleaning out
	Palmluck Oil Co.	1	23, 3-16		Rig
Palmdale	Neu-Cal	1	17, 6-12	1100	Drilling
Palos Verdes	Gene McLaren	1	27, 4-14	3992	Idle
	Rolling Hills Pet.	1	27, 4-14	5100	Idle
Santa Monica	The Texas Co., A-S	1	9, 2-15	7100	Drilling
San Pedro	Grady, R. T.	1	23, 5-14	350	Drilling
	Hogan Pet. Co., Burkhard	2	6, 5-13	3350	Drilling
Whittier	Langstaff, Geo. W., Iliff	1	8, 2-11	2250	Idle
	H. C. Oil Co., Joyce	1	22, 2-11		Rig
	Orange County				
Anaheim	The Texas Co.	A-13-1	8, 4-10		Rig
Bolsa Chica	New Fields Oil Co.	1	16, 5-11	4100	Idle
Corona del Mar	Shell Oil Co., Irvine	1	6, 7-9	2161	Drilling
Costa Mesa	A. V. Oil & Gas Co.	1	16, 6-10	4751	Idle
	San Bernardino				
Carbon Canyon	Carbon Canyon Oil Co.	1	30, 2-8		Rig
Chino	So. Counties Pet. & Drlg. Co.	1	26, 2-8	2700	Drilling
	San Diego County				
Carlsbad	Dauphin Dev. Co., Kelly	1	16, 12-4	820	Drilling

2000 bbls. a day; later being beaned back to 1100 bbls.

The Pongratz organization, identified with the field since its inception, is completing its Martin No. 1 at 6700 ft. after which equipment will be moved to Lakewood Oil Co., Newmark No. 1.

Only major operator to obtain fourth finger production is Standard Oil Co. which recently finished Braun No. 3 flowing 960 bbls. The company is preparing to deepen Braun No. 2 from the old 3800 ft. zone and is starting three new wells in the field.

Brookline Oil Co., after deepening Drake Community No. 1 to 6700 ft., has been delayed by difficulty in landing a liner, but should soon be in the completed list.

McVicar & Rood have spudded their third well on the Manz lease and Olympic Refining Co. is drilling below 4000 ft. in Smith Community No. 1.

West of the field, Sea Cliff Petroleum Co. No. 1, located on the golf course, is drilling at 2150 ft.

Superior Oil Seeks Rosecrans Deep Sand

Seeking deeper producing horizons in the southern area of the Rosecrans field, Superior Oil Co. is deepening Maxwell Comm. No. 12 below 8000 ft. Completed Nov. 23 at 7724 ft. for 950 bbls. cutting 8%, the well was allowed to produce only a few days before the liner was pulled and the hole re-entered for deepening. Barnsdall Oil Co.'s Rosecrans No. 10, located at the southeast corner of Rosecrans and Main streets, failed to show appreciable quantities of oil when tested from 8100 to 8534 ft. and is plugging back and testing by stages. Total depth is 8747 ft.

Two northerly wells located west of Figueroa St. have not lived up to the expectations of their owners. Republic Petroleum's Trust No. 1, redrilled and deepened from the 5900 ft. zone, bottomed at 7571 ft. and after setting a water string at 7290 ft., completed pumping 200 bbls. of clean oil. Universal Consolidated Oil Co. Trust No. 6, drilled to 7976 ft. and plugged to 7575 ft., would flow neither naturally nor on the gas lift and probably will also be put on the pump.

In the southern "hot spot" sector, F. E. Fairfield is preparing to complete Able No. 1, having finished a long sidetracking job. On the adjoining properties, Hydro-Carbon Products Co. is making good progress with its two wells, Cole No. 1 and Duchess No. 1. Royalty Service Co., whose Gordon No. 2 is yet flowing better than 900 bbls., is drilling No. 3 below 2000 ft. and is planning to drill No. 4. J. Lloyd O'Donnell is better than 6000 ft. deep in his well No. 46.

The Texas Co. Enters West Anaheim Area

The Texas Co. has at last started work on its long rumored test of the west Anaheim area. The new project, to be known as Well No. A-13-1, is located two miles west of the city in the northwest corner of sec. 8, 4-10 and is expected to be carried to sufficient depths to thoroughly test the possibilities of the district. Shell Oil Co. in the last two years has drilled three wells near Anaheim, all of which encountered oil showings.

Basin Finishes 2nd Potrero Well

A triumph of modern engineering and core study, Potrero No. 2 of the Basin Oil Co. was finished recently flowing 385 bbls, of 43 gravity clean oil from the interval 6015-6030 ft. Derrick has been erected for a third well on the country club property.

NEW!

Write for full details on this new Martin-Decker development. It's the weight indicating instrument you need for all heavy duty operations where a chart record is not required, and where portability is essential

A Handy Carrying Case is Standard Equipment

MARTIN-DECKER PRESENTS THE "SPECIAL" ILLUMINATED WEIGHT INDICATOR

Check these outstanding features!

LARGE ILLUMINATED DIAL Big 15" dial with built-in illumination can be clearly seen from all parts of the rig day or night.

DIRECT READINGS IN POUNDS Two interchangeable dials nested within the case give direct readings in pounds for all commonly used string ups and line sizes.

DIRECT READING IN POINTS The center of the dial is graduated in Weight and Vernier Indicator Points for the convenience of those desiring this system.

EXTREME ACCURACY In addition to the regular gauge hand a supersensitive gauge hand six times as sensitive enables the Special to cover all phases of drilling and production work with high precision.

GREATER CAPACITY New extra sized mechanism has sufficient capacity to handle wells deeper than any thus far drilled.

LIGHT WEIGHT Compact construction and use of weight reducing alloys eliminate tendency for instrument to swing on dead line in rough drilling. Easily portable—weighs only 35 pounds complete.

TAMPER-PROOF Factory filled and sealed. Cannot leak. Requires no pumping, no attention.

WEATHER-PROOF Leak proof duraluminum case and shatter-proof, rubber-sealed dial glass make instrument completely water-proof and weather-proof.

RUGGEDLY BUILT Every part is designed especially for the severe service of oil field usage, and under *all* operating conditions the Special is uniformly dependable.

MARTIN-DECKER CORPORATION

LONG BEACH CALIFORNIA

San Joaquin Valley A. F. McQUISTON, Bakersfield, California

Mid-Continent Distributor REED ROLLER BIT COMPANY, Houston, Texas

ANNOUNCING

California OIL WORLD Directory

1938-1939

A QUICK, READY REFERENCE DIRECTORY, BRINGING TO OIL EXECUTIVES ALL IMPORTANT FACTS, FIGURES AND PERSONNEL INFORMATION, SIMILAR TO DIRECTORIES NOW AVAILABLE TO EXECUTIVES IN OTHER BRANCHES OF INDUSTRY — PLUS MORE THAN 30 PAGES OF LARGE SCALE UP-TO-DATE MAPS OF ALL CALIFORNIA OIL FIELDS.

WHAT IT WILL CONTAIN

Between the two covers of California Oil World Directory you will find a wealth of data never before contained in a single volume for quick reference.

All important 1938 statistical information will be available as promptly as it can be compiled and printed — Drilling Operations — Crude Oil Production — Well Completions — Gas Production — Crude Oil Prices — Gasoline and Crude Oil in Storage — Production Figures by Operators — Complete Field Data — and other facts and figures from the inception of oil operations in California up to and including December 31, 1938.

THE NEW DIRECTORY

Of even greater importance than the Statistical Information, will be a complete Directory of all Western Oil Operators, listing not only the names, addresses, officers, field and refinery superintendents, corporate details and financial structures, but facts as to land holdings, proven acreage, number of wells, refineries, pipe lines, marketing facilities and figures on production and sales by products.

NAMES OF OPERATING PERSONNEL

A further important feature will be the listing, by companies, of the operating personnel in the Drilling, Producing, Refining and Marketing Branches of the entire Western Petroleum Industry — the men who buy or approve the purchase of the countless products required by all of these branches.

MORE THAN 30 PAGES OF MAPS

An added, extra value of California Oil World Directory will be maps of all California Fields, revised to the latest date before going to press. All maps will show the names of land owners or operators — status of wells completed or drilling — and will be produced on a legible scale from original maps prepared by an outstanding map-making organization.

This map section alone will definitely be worth many times the $5.00 subscription cost of the Directory.

GUARANTEED COVERAGE AT LOW COST

The minimum number of copies of California Oil World Directory to be distributed will be 2,000, of which approximately 1,500 copies will be used by oil operators for at least an entire year as they refer time and time again to the facts, figures and maps which are a vital part of their daily operations.

Full pages in California Oil World Directory are priced at $250.00, which includes printing of your advertisement in black and your choice of four standard colors, orange, blue, red or yellow; one-half page advertisements are priced at $125.00; one-quarter pages at $75.00 when printed only in black. Advertisements will be run facing pages containing statistical data, personnel listings and maps, and early reservations will insure a choice location for your advertisements.

START HERE by returning the coupon, or telephone RIch. 2136 to get ALL DETAILS and to reserve best space.

OKAY — Connect me up to CALIFORNIA OIL.

- ☐ send complete information
- ☐ have representative call
- ☐ reserve ..... pages space
- ☐ reserve ..... copies of California Oil World Directory at $5 per copy.

NAME .....

COMPANY .....

ADDRESS .....

CITY ..... STATE .....

...RNIA'S FAVORITE OIL ...CATION FOR OVER 30 ..., CALIFORNIA OIL ... NOW ISSUED TWICE ...LY AND GROWING IN ...ND POPULARITY WITH EVERY ISSUE!

AND NOW — THE CONNECTING LINK IN THIS CHAIN OF SERVICES SO IMPORTANT TO BOTH OIL COMPANIES AND SUPPLIERS — CALIFORNIA OIL WORLD DIRECTORY, AN ANNUAL DATA BOOK OF FACTS-FIGURES-PERSONNEL OF THE WESTERN PETROLEUM INDUSTRY.

THE OUTSTANDING WEEKLY SCOUTING AND NEWS SERVICE, INCLUDING LATEST REPORTS ON *EVERY* DRILLING WELL — CALIFORNIA OIL WORLD NEWS SERVICE.

California OIL WORLD Directory

Texas Redrills Santa Monica 'Cat

Rumored to have encountered the top of the Franciscan schist basement near the 7200 ft. level, The Texas Co. bottomed its Santa Monica wildcat, Anderson-Spring No. 1 at 7285 ft. and is plugging back to redrill the hole. Although no information has been released by the company, it is believed that the drill passed directly from the nodular brown shale into solid schist without encountering any intervening conglomerate, the productive formation in the Playa del Rey field. It is planned to deflect the hole with the hope of finding the conglomerate.

Torrance Drilling Holds Even Pace

With an even dozen wells drilling and several more being completed, Torrance-Lomita holds to its even rate of activity established after the collapse of last summer's boom. Completions, while far from sensational, have been relatively good; Louisiana Oil's Lord No. 2 and E. H. Woodyard's Killingsworth No. 1 both located at 236th and Eshelman initialling 300 bbls.

Treasure Tests Playa Del Rey Well

Treasure Oil Co., whose Playa del Rey outpost well has been idle for some months, recently resumed operations. After cleaning out to the old bottom, 6511 ft., 7 in. casing was cemented at 6135 ft. and a perforated liner landed on bottom. Swabbing lowered the fluid 5600 ft. from which point it rose 500 ft. while standing eight hours. Pressures appeared to be low and though the oil seems clean, it will be necessary to resort to artificial production means.

Athens-Rosecrans Tests Center Basin Interest

Chief among the centers of Los Angeles Basin wildcat interest are the two exploratory wells drilling in the Athens-Rosecrans area. W. E. Entrikin, Trustee, "D" No. 1, located at 120th and Main streets, is drilling near the 5500 ft. level with interest heightened by the fact that little or no information is obtainable regarding formations.

Located on Rosecrans east of Avalon Blvd., Western Gulf Oil Co.'s Bagg No. 1 is another well causing much speculation. Denying persistent rumors, the company admits no showings to 7700 ft.

Ford Zone Limited In Wilmington Field

Reaffirming the belief of engineers that the Ford zone would be limited in extent, latest deepening jobs have found little or no production. Master Petroleum Co. found the sand barren after carrying the old Bankline Oil Co. Chuck No. 1 to 5762 ft. and has plugged to recomplete in the Ranger zone. The well is located at the corner of Anaheim and Mahar streets. Destined apparently to become only small producers are Geo. F. Getty, Inc. "W" No. 4 at "F" and Dominguez and Pacific Western's Wilmington Comm. No. 1 a block to the south.

Still held up by legal red tape, the city of Long Beach has taken no action to develop either the harbor channels or the filled in tidelands.

Torrance Extension Test Finds Schist Barren

Definitely proving that no schist production may be expected in the Harbor City extension of the Torrance field, R. R. Bush Oil Co., Torino No. 1 penetrated approximately 30 ft. of the "basement" finding it entirely barren. Located on Frampton Ave. at the south limit of the old Main zone production, the well is considered a conclusive test. An attempt will be made to complete in the 5200 ft. horizon which is not too good in this location.

An interesting test was recently made in Richfield's southeasterly outpost, Capital No. 1. With bottom plugged from 5301 to 5230 ft., a formation test made of the interval below 5160 ft. recovering 30 stands of clean oil and three stands of gas-cut, oily mud. Preparations are being made to complete after setting casing at 5160 ft.

With completions averaging only 200 bbls. and settled production showing a rapid decline, activity in the area is diminishing; only four wells actually drilling at the present time. Interesting from the standpoint of establishing the dip of the schist is the Texas Co.'s Oakley No. 2, drilling at 5700 ft. This well will make the third point on a triangle formed by D & B Oil Co. Dawn 2 and Bush Oil Co. Torino No. 1.

Answering the Government's mandamus proceedings in the first Madison oil case, Judge Stone filed a reply in the U. S. Circuit Court of Appeals on November 5.

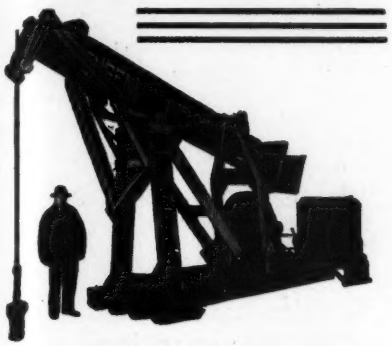
Nearly 20% of the families with incomes of $15 a week or less living in middle sized cities in the Rocky Mountain states own and operate automobiles.

Echo-Meter
IGI
STEEP-FRONT WAVE*
TUBING COLLAR REFLECTIONS
TUBING CATCHER
LINER TOP
FLUID LEVEL
GIVES YOU ACCURATE FLUID LEVEL DETERMINATIONS IN A FEW MINUTES AT SMALL COST
Is your pump doing its job? This is an important question because you can't see your pump at work. However, ECHO-METER can give you the right answer in a few minutes without shutting down the pump, pulling rods or tubing, or otherwise interfering with production.
Our method and equipment are also designed to measure static Fluid Levels with the same speed, safety, economy and dependability.
A LOW COST SERVICE
The cost for a single ECHO-METER Fluid Level Determination is only $25.00 per well, plus 8 cents per mile for the truck; additional wells in the same day result in a materially lower unit cost per well usually averaging less than $10.00 for each additional well.
Always use ECHO-METER Service for Accuracy, Economy, Safety and Speed. Complete details on request.
INTERNATIONAL Geophysics, INC.
Organized in 1929 • Phone West Los Angeles 34180
1063 Gayley Avenue Los Angeles, California
NO SHUTTING DOWN THE PUMP
NO PULLING RODS OR TUBING
NO STOPPING OF PRODUCTION

Coastal District

Cal. Coast No. 12 Pumps 170 Bbls. in Santa Maria Old Field

Indicating that the old Santa Maria field is by no means dead, Union Oil Co. recently completed Cal-Coast No. 12 pumping at the rate of 170 bbls. a day. The oil was clean and tested 24 gravity; ten points higher than the average of the younger Valley field to the north. "Drilled in" with cable tools, the hole was bottomed at 3900 ft.



NEW LOW PUMPING COSTS

. . . have been established in California by producers using JENSEN Units. The "discovery" of these JENSEN Units by west coast operators means that pumping costs can be reduced to the absolute minimum and kept that way. If you haven't had the good news in detail, write, wire or 'phone . . .

A. V. TURNER
California Representative
Box 642 Huntington Park

STOCKED BY:
MEDEARIS OILWELL SUPPLY CO.
8638 Otis St. South Gate, Calif.

JENSEN
BROTHERS
MANUFACTURING CO.
Coffeyville, Kansas, U. S. A.

Increase Noted In Sespe Activity

Strange as it seems at this time of year when rains may at any moment make roads impassable, activity in Ventura's Sespe country has shown a slight increase. Beside the wells which have worked steadily all summer, some that have been idle have resumed operations and a couple of new projects have been started. Barring heavy rains, the next few months should see several interesting completions in the area.

Abandonments Hit Santa Barbara Wildcats

Three abandonments in little more than a week have seriously depleted the ranks of Santa Barbara county wildcats. Almost simultaneously General Petroleum Corp. and Continental Oil Co. decided they had seen enough in their La Laguna wells, the former company giving up at 3834 ft. and the latter stopping in schist at 5635 ft.

Jim O'Donnell joined the procession by waving the white flag on Helen No.

NORTHERN COUNTIES WILDCATS

County	Well	No.	Section	Depth	Status
Humboldt	Texas Co., Eureka	2	22, 3-1	7708	Redrilled 4864 Testing
Monterey	Anderson, A. A., Hillman	1	15, 24-14	4004	Idle
	Tannehill, L. B., Quinn	1	35, 20-8	2590	Abandoned
Solano	Richfield Oil Corp., Potrero	1	10, 4-1	5334	Testing
Stanislaus	Orestimba Oil Co.	1	12, 7-7	1450	Drilling

COASTAL COUNTIES WILDCATS

Area	Well	No.	Section	Depth	Status
Santa Barbara County					
Capitan	Litho Oil Co., Rhode I.	1	4, 4-30		Rig
Correaga	Douglas-Stratton Oil Co.	1	8, 8-33	7240	Drilling
Foxen Canyon	Richfield Oil Corp., Tinaquaic	1	36, 9-32	2350	Drilling
Gaviota	Gaviota Oil Co., Hollister	1	35, 5-33	3215	Idle
Gato Ridge	Barnsdall Oil Co., Mag.	5	9, 8-32	3035	Idle
	Pezzoni	1	15, 8-32	4494	Idle
Lompoc	O'Donnell, J. E., Helen	1	8, 7-33	4998	Abandoned
Los Olivos	Continental Oil Co.,La Laguna	2	25, 8-31	5686	Abandoned
	General Pet. Corp., La Laguna	1	6, 7-30	3831	Abandoned
Orcutt	Warren Deuel, Garrett	1	12, 9-34		Rig
Summerland	Oil Group, Inc., Hyland	1	16, 4-26		Rig
San Luis Obispo County					
Edna	Loma Grande Oil Co., Lewis	1	28, 31-13	2125	Idle
Elk Horn	Calif. Pet. Prod. Co., Irons	1	19, 10-24	1710	Plugging
	Lee, Harry, Defiance	1	7, 32-22	290	Idle
	Western Plains Oil Co.	1	7, 31-21	4010	Idle
Huasna	Hancock O. Co.,Scherer-Dickes	1	30, 12-33	5593	Idle
Paso Robles	Vanguard Oil Co., Clark	1	26, 27-14	4950	Idle
	Epco., Inc.	1	27, 26-13	2690	Drilling
Ventura County					
Ojai	High Mesa Oil Co.	1	16, 4-22	1770	Drilling
Red Mountain	Martin, J. W.	3	15, 4-21	1250	Idle
Sespe	Claran Oil Co., Hardison	1	22, 4-20	1850	Drilling
	Commander Oil Co.	7-F	13, 4-19	575	Redrilling
	Crystal Oil Co., Crystal	1	35, 5-20	250	Idle
	Ivers, H. A., Kentuck	14	1, 4-20		Location
	McKinnis, Chas., Cosley	1	14, 4-19	1090	Idle
	Merchants Pet., Cochran	8	1, 4-20	1390	Drilling
	Speik Oil Co.	1	33, 5-19	3440	Idle
	St. Louis Oil Co.	1	1, 4-20	1625	Drilling
Shiells Canyon	The Texas Co., Shiells	136	4, 3-19		Rig
South Mt.	Clipper Oil Co.	1	17, 3-20		Rig
Tar Creek	Section 20 Oil Co.	1	20, 5-19	2365	Drilling
Timber Canyon	Stallings, Senter, Ahlberg	1	24, 4-21	1445	Idle
Ventura	Ventura Drilling Co.	1	10, 3-23	2025	Drilling
	Ventura Exploration Co., Sexton	1	30, 3-22	9511	Testing

1, edge test of the Lompoc field. Production tests from 3900 ft. to bottom at 4998 ft. failed to put any oil in the tanks.

Douglas-Stratton Oil Co. deepened Carreaga No. 1 to 7238 ft. and when last heard from was checking the brown shale with an electric logging device.

Independent Activity Increases at Ventura Ave.

With five independent operators working on as many different projects, much of the Ventura Avenue limelight has been stolen from the major companies. Within the field, Lloyd Corp. is making an open hole production test on well No. 2, located on the east plunge. Drilled to 7303 ft., the well has been plugged to 7060 ft. and casing set at 6440 ft. Several days swabbing have shown increasing quantities of oil and gas. On the Bolsa Chica Oil Co.'s Hartman lease, British American Oil Producing Co. is drilling No. 7 below 5000 ft. while on the Avenue, Alliance Petroleum Co. is preparing to drill Hisey No. 3 on the old General Petroleum lease.

North of the field, Ventura Drilling Co. is rigging heavier equipment to deepen Canet No. 1 below present depth of 2025 ft. On the Sexton lease, southeast of production, Ventura Exploration Co. is preparing to retest its 9511 ft. hole which has been standing idle for some time.

As always, major company operations form the bulk of drilling activity, Shell Oil Co. running two strings of tools and Tide Water Associated Oil Co. keeping far in the lead with ten, six of which are on the large Lloyd lease.

Lone Santa Maria Driller Prepares to Complete

Fred E. Cole No. 18, lone active well in the Santa Maria Valley field, will soon be moved to the producing classification. After penetrating the Franciscan ten feet to 5545 ft., 7 in. casing was cemented at 5170 ft. and when last reported, a liner was being run for completion. The well is located in sec. 28, 10-34 and is a southwestern outpost.

MORE VALLEY BASIN

McKeon Sets Casing In Carmenita Well

Preparing to make further tests in Carmenita No. 1, exploratory well west of Buena Park, John McKeon has set a solid string of 5 in. casing on bottom at 8962 ft. Tests between 7500 ft. and 8350 ft. resulted in a salt water flow but also revealed the presence of considerable quantities of gas. Since deepening, gas showings have tended to increase and it is possible that if good oil sands are not encountered in the next few hundred feet, the hole will be plugged and the casing gun perforated.

Standard Offsets Aliso Canyon Producer

First to enter the Aliso Canyon field, discovered by Tide Water Associated Oil Co., Standard Oil Co. is building a rig for Ward No. 1, approximately 700 ft. north of the discovery well, Porter No. 1. Present production of the field's only well is 265 bbls. of 24 gravity clean oil flowing through a 12/64 in. bean under 140 lbs. pressure.

Continental Abandons Strand Wildcat Test

Only a few months ago heralded as the discoverer of a new oil field, Continental Oil Co.'s KCL No. "E" 1 is now but another of the many dry holes in the Ten Section-Greeley area. Oil sand cored near 8200 ft. failed to produce and after deepening to 8574 ft., the well was abandoned.

Results of experimental work conducted to find uses for tar may be formed in the conversion of natural gas to liquid fuel are described in U. S. Bureau of Mines Technical Paper 587, "Studies Pertaining to the Catalytic Hydrogenation of Pyrolytic Tars", by H. M. Smith, Harry T. Rall, and Peter Grandone.

California Crude Oil Production

Two Weeks Ended November 26, 1938

	November Daily Quota	Average Daily Production	Excess
San Joaquin Valley			
Belridge—North	14,690	12,331	*2,359
Belridge—South	1,885	1,102	*783
Buena Vista	17,005	16,401	*604
Canal	3,585	3,628	43
Coalinga-East(Eocene)	1,740	1,794	54
Coalinga—East-West	15,917	6,356	*9,561
Coffee Canyon	2,930	3,309	379
Edison	2,455	2,504	49
Elk Hills	7,780	10,320	2,540
Fruitvale	7,145	7,857	712
Greeley	2,945	2,250	*695
Kern Front	7,905	7,729	*176
Kern River	5,545	2,648	*2,897
Kettleman No. Dome	59,590	60,770	1,180
Lost Hills	4,270	3,252	*1,018
McKittrick	3,905	3,416	*489
Midway	42,621	45,792	3,171
Mount Poso	13,909	13,951	42
Mountain View	8,625	9,265	640
Rio Bravo	5,340	9,025	3,685
Round Mountain	9,425	10,076	651
Ten Section	8,815	8,879	64
Wasco	370	435	65
Other Fields	2,150	2,490	340
TOTAL	250,547	245,580	*4,967
Coastal Counties			
Elwood	4,895	5,145	250
Rincon	2,960	4,004	1,044
Santa Maria	5,930	3,392	*2,538
Gato Ridge	2,410	3,348	938
Santa Maria Valley	19,390	10,090	*9,300
Santa Paula-Newhall	5,160	5,609	449
Ventura Avenue	31,590	33,707	2,117
Other Fields	5,850	6,108	258
TOTAL	78,185	71,403	*6,782
Los Angeles Basin			
Alamitos-Seal Beach	7,535	8,166	631
Brea-Olinda	8,355	5,658	*2,697
Coyote—East	2,625	3,084	459
Coyote—West	7,950	7,818	*132
Domingues	19,910	27,472	7,562
El Segundo	4,455	6,258	1,803
Huntington Beach—New and Old	26,050	31,850	5,800
Inglewood	13,325	12,839	*486
Long Beach	43,150	54,306	11,156
Montebello	6,220	6,599	379
Montebello-West End	4,175	10,023	5,848
Playa del Rey	5,145	5,630	485
Richfield	7,705	8,005	300
Rosecrans-Athens	8,635	15,088	6,453
Santa Fe Springs	28,480	31,250	2,770
Torrance	15,493	19,018	3,525
Wilmington	69,765	96,330	26,565
Other Fields	2,640	2,929	289
TOTAL	281,613	352,323	70,710
STATE TOTAL	610,345	669,306	58,961

*—Shortage.

LINK-BELT *Vibrating* SCREEN

— for Reconditioning Rotary Mud

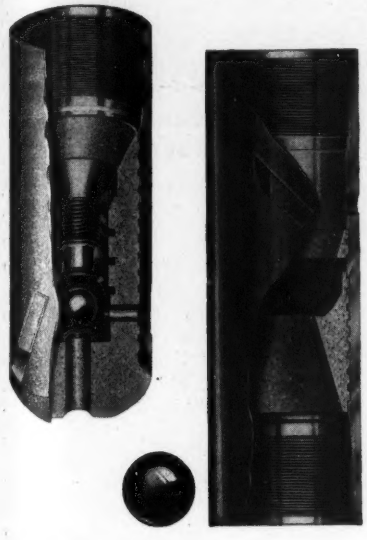
● Link-Belt screens are made for shallow, medium, and deep well drilling. They have many exclusive features, such as fine mesh stainless steel screen cloth, rubber cushioned; adjustable feed; enclosed vibrator unit; unitized collecting tank; self-contained drive, etc. Link-Belt pioneered in this field, and continues to give the oil industry the most efficient, dependable and economical method of reconditioning rotary mud. Send for Folder No. 1772.

Link-Belt Company, Philadelphia, Houston, Tulsa, Dallas, Los Angeles, Indianapolis, Chicago, New York. Sold by most supply houses.

7543

NEW TYPE OF CEMENTING EQUIPMENT

A new design of float shoe that is particularly adaptable for two-stage cementing and for single cement jobs that require high pressure to put away the cement or to break circulation without putting a strain on the liner or casing has been announced by Baker Oil Tools, Inc., of Huntington Park, Calif. This



shoe is the new Baker Duplex Cement Wash-Down Whirler Float Shoe and provides for the placement of the slurry through tubing or drill pipe. When a second stage of cementing is to be done above the shoe, the new Baker Whirler Bridging Collar is placed in the pipe at the bottom of this upper stage.

The internal mechanism of the Duplex Cement Wash-Down Whirler Float Shoe consists of a concrete plug in which is embedded a ball-type float and back-pressure valve. Leading off from the central fluid passageway through the shoe are ports at the outer end of which are baffles. These baffles direct the flow of fluid or cement slurry in a downward whirling motion. The valve cage extends to the top of the concrete plug and at the top is equipped with left-hand square threads.

Cementing is done through a string of drill pipe on the bottom of which is a Baker Circulating Joint and Bottom Sub, the latter having left-hand square threads corresponding to those in the Duplex shoe. This cementing string is run in and screwed into the shoe after the liner or casing has been run into the well. Circulation is broken and the cement pumped down the tubing and through the whirler ports in the shoe at any presure which may be necessary. The cementing string is then immediately unscrewed and removed from the well, being flushed out when disengaged to eliminate any hazard from stuck or clogged tubing.

The features of floating, valve efficiency and whirler action are all provided in this shoe. The down-whirler action assists in running casing where bridges or other formation obstructions may interfere and thus eliminate the hazard of sticking. Other types of Duplex Shoes include the Whirler Float Shoe, Cement Float Shoe and Cement Guide Shoe.

The Baker Whirler Bridging Collar used for the second stage of cementing consists of a whirler collar, below which is a seat for a bridging ball. This seat is made of Bakelite and is embedded in a concrete plug through which is an opening large enough to pass the cementing string used to cement the lower stage. After the cementing string has been withdrawn upon completion of the first stage, a bridging ball is dropped into the liner or casing and seats in the bridging collar. This forms a bridge in the pipe and forces cement then pumped down to pass out the whirler ports in the collar. The cement can be placed by the conventional plug method or through a cement retainer set above the ports when high pressure is required to break circulation or place the cement slurry.

The bridging collar is usually equipped with a Baker Metal "Petal" Basket which prevents dissipation of the cement and protects any perforations below the upper cement job when a producing zone lies between the two cement jobs. Complete details with illustrations showing the application of this equipment can be secured from the manufacturer.

Metric-American Air-Actuated Remote Recorder & Controller

American Meter Company, Inc., has issued a new Bulletin (E-22) completely descriptive of the Metric-American Air Actuated Remote Recorder and Controller.

This newly-developed instrument is devised for the extremely accurate recording and control of rate of flow or pressure of gas, air, steam or fluid, or for the recording and control of liquid level.

Sensitive yet rugged in construction, the instrument is particularly adapted to industrial processes where ordinary connecting lines are subject to freezing (unless steam traced or jacketed), or to gas formation in liquid lines or condensation of liquid in gas lines; or where it is desired to exclude main-line high pressures or such gases as propane or butane from the control room.

Copies of Bulletin E-22—which also includes detailed instructions on installation, operation and maintenance—may be procured from American Meter Co., or Metric Metal Works, Erie, Pa., or any of the company's factories or sales offices.

Tulsa-Type Improved Pipe Line Scraper

The new Tulsa-Type pipe line scraper manufactured by the Tulsa Boiler & Machinery Co., Tulsa, Okla., supplements the other two Tulsa-Type pipe line scrapers of the Knife and Brush Types and has been developed to clean particularly long gasoline lines. After the Knife or Brush type scraper is first used to clean a bad sediment or corrosion blocked line, this Plug-Type scraper will keep the line clean with minimum effort. Scraper consists of a driving section using special composition rubber driving-discs flexibly connected to a cleaning head interchangeable to any one of three types—Plug, Knife, or Brush type. All parts subjected to wear are heat treated to secure maximum life and all parts are made interchangeable whenever possible. Skeleton of the scraper is the same for the 6-in. and 8-in. sizes, and is readily changed from one size to another by changing guide arms, driving discs and brushes or knives. When changing one type scraper to another type it is only necessary to remove one unit and replace the other for scrapers of the same size, the makers say.

In addition to the interchangeable feature of three types of scrapers, the Knife, Brush, and Plug types; parts are also interchangeable for 6- or 8-in. lines. One skeleton and the few extra parts make three distinct type scrapers in two sizes. Wearing parts are made of special heat treated steel and twin guide wheels mounted side by side now replace the former single wheel, teeth are cut much deeper and bearing area is four times greater, assuring maximum long service on all wearing parts. Driving discs are of a special composition rubber, which the action of the gasoline or crude oil in the line tends to expand, forcing them closely against the inner walls of the pipe line, maintaining a tight seal the full length of the line.

Valued at $1,627,265,000, crude oil and natural gasoline produced in the United States in 1937 accounted for 30% of the total value of all minerals produced.

San Joaquin Engineers Are API Committee Members

W. J. Larson, of Union Oil Co. of California, Bakersfield, Calif., has been appointed vice chairman of the American Petroleum Institute's Division of Production Topical Committee on Production Practice in the California District. Nine other California petroleum engineers have been made members of the committee to represent the San Joaquin Valley area. D. L. Caldwell, of Barnsdall Oil Co., Los Angeles, is chairman of the topical committee, which is a California group of the Division of Production Central Committee on Drilling and Production Practice.

Other new California members are:

Lot Bowen, Western Gulf Oil Corp., Bakersfield; E. B. Armstrong, Honolulu Oil Corp., Ltd., Taft; G. T. Pearson, Continental Oil Co., Wasco; Murray Putnam, Standard Oil Co. of California, Avenal, Calif.; P. E. Lair, Shell Oil Co., Bakersfield; J. R. Thomas, North American Consolidated Oil Co., Taft; C. B. Kimberlin, Kettleman North Dome Association, Avenal; M. W. Morris, Standard Oil Co. of California, Taft; and H. S. Stark, Honolulu Consolidated Oil Co., Taft.

Coffin Centrifugal Boiler Feed Pump

The Coffin Centrifugal Boiler Feed Pump is described by the makers as a high pressure single stage turbine driven centrifugal boiler feed pump of integral design. Pressures up to 500#/sq. in., deliveries up to 350 G.P.M. Turbine and bearing casing, single steel casting. Solid bronze water end. Requires no packing between overhauls due to self-setting design. Packs only low pressure with very light packing contact. All wearing parts in pump completely renewable. High speeds and small diameters produce very low steam consumption. Nominal speed 7150 R.P.M. Peripheral speeds low because of small diameters. Pump developed twelve years ago for locomotive boiler feed. Over a thousand in service.

More complete information may be obtained by writing to the J. S. Coffin Jr., Co., Englewood, N. J.

Specifying Regulators, Meters, for Bottled Gas

Specifying meters and regulators for the measurement and control of liquefied petroleum gases is a highly selective process requiring an extensive background of technical information. Reliance Regulator Corp. in cooperation with American Meter Co. has issued a comprehensive new bulletin which greatly simplifies the process.

Types of applications and working conditions are clearly defined, and complete specifications for the appropriate types and sizes of meters and regulators given in convenient form.

While this bulletin is not intended to supplant the advisory service offered by the "Reliance" and "American" engineering departments, it does afford such detailed, easily understandable data as to make ordinary purchases of the correct equipment a simple matter.

Entitled "Instructions for Ordering Regulators and Liquefied Petroleum Gas Meters," it may be obtained from Reliance Regulator Corp., Alhambra, Calif., or any of the American Meter offices.

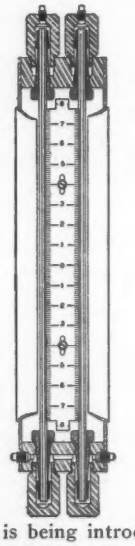
Flexarc Welding Cable

A new leaflet describing flexarc welding cable has been published by Westinghouse Electric & Manufacturing Co. These cables are flexible, durable, light in weight and have positive insulation. They comply in all respects with latest I.P.C.E.A. specifications for rubber sheathed arcwelding cables.

Copies of this leaflet, Catalog Section 26-630, may be secured from the nearest district office of Westinghouse Electric & Manufacturing Co., or from headquarters at East Pittsburgh, Penn.

New Packless Type Hi-Pressure Manometer

A new straight tube, high-pressure manometer suitable for pressures up to



1,000 pounds is being introduced by the Daniel Orifice Fitting Co. of Los Angeles. The design of this new Wilcox Manometer, Patent No. 2,088,777, permits the use of straight tubes which are sealed positively against leakage by synthetic rubber sleeves, thus eliminating strain or stresses in the glass. The construction does away with stuffing boxes and provides a compensating seal under pressure.

Because there is no U-bend and only the lightest contact between glass and metal parts, there is no distortion of the tubes when seal is made. Every part is easily accessible, impervious to gas, oil, gasoline, etc., and easily cleaned. If glass is accidentally broken, only one side need be replaced. Full details of the Wilcox Manometer are available from the Daniel Orifice Fitting Co., Dept. 110-K, 3352 Union Pacific Avenue, Los Angeles, Calif.

10 California Engineers Named API Group Members

Ten California petroleum engineers have been appointed members of the American Petroleum Institute's Division of Production Topical Committee on Drilling Practice in the California District. R. R. Shinn, of General Petroleum Corp. of California, Taft, Calif., has been appointed vice-chairman of the topical committee, which has been enlarged to include the engineers from the San Joaquin Valley area. The committee is one of the topical groups of the Central Committee on Drilling and Production Practice.

In addition to Vice Chairman Shinn the new California members are:

W. A. Clark, The Texas Co., Bakersfield; H. H. Dievendort, Petroleum Securities Co., Avenal; D. T. H. Hoenshell, Kettleman North Dome Association, Avenal; Don Koch, Superior Oil Co., Shafter, C. E. Peavy, Shell Oil Co., Bakersfield; F. H. Schnoor, Standard Oil Co. of California, Taft; C. A. Steiner, Union Oil Co. of California, Bakersfield; G. O. Suman, Tide Water Associated Oil Co., Oil Center; and A. F. T. Turman, Standard Oil Co. of California, Taft.

Gasoline Sales Up In October

October was the fifth month in 1938 during which gasoline sales increased, it was announced in the monthly report issued today by the State Board of Equalization.

The October gasoline tax was assessed on the distribution of 151,338,870 gallons. The total tax amounted to $4,540,166.10 as compared with $4,308,581.28 for the same month of the previous year, a gain of 5.37 per cent. The month's income also was well above the $4,277,422.50 collected on September sales.

Other months which showed gains over the same period of 1937 included February, April, June and August.

"Skinner-Seal" Line Trade Mark Issued

Announcement is made by K. G. Merrill, president of the M. B. Skinner Co. of South Bend, Indiana, makers of repair clamps for steel and cast iron pipe, that the U. S. Patent Office has just issued Trade Mark No. 359892,

K. G. Merrill

which protects the trade name "Skinner-Seal" used in connection with Skinner products.

This is especially gratifying to Skinner officials, as the word "Skinner-Seal" clearly defines the basic principle of the Skinner pipe repair method—to **seal** the gasket in each of their nine different styles of pipe leak repair clamps—sealing in pressure, sealing **out** air and moisture, and thus protecting the gasket permanently.

Although the trade name "Skinner-Seal" is new, the Skinner pipe repair method was introduced in 1898, and Skinner Clamps have been widely used since that time.

L. B. Swift Succeeds As Taylor Instrument Head

Herbert J. Winn, retiring president of the 87-year-old Taylor Instrument Co., becomes chairman of the board of directors and is succeeded in the presidency by Lewis B. Swift, who has served as vice-president in charge of engineering and research. Karl H. Hubbard has been appointed chief engineer in charge of engineering research and design, and Dr. H. L. Mason will succeed him as head of the research division. Official announcement was made Nov. 9.

Mr. Swift joined the Taylor Instrument Co. in 1904. In 1908 he entered Cornell University, but continued to work for Taylor during vacations. After receiving his M.E. degree in 1912, he rejoined the company on a full time basis. He was in the industrial sales department until 1919 when he organized and took charge of the sales engineering department.

In 1928 Mr. Swift was elected a director of the company, and in 1929 he became chief engineer.

Mr. Winn, retiring president, has been with Taylor nearly 46 years, and has served as president and treasurer for 25 years. When he joined the company in March 1893, the Taylor line was composed of only household thermometers, clinical thermometers, and mercurial barometers; and the combined office and plant forces did not exceed 60 employees.

New A.P.I. Standards Ready at L. A. Offices

Recently issued standards of the American Petroleum Institute include the following, which are available at the Los Angeles office, 510 West Sixth St.:

Standards No. 4, Rigs and Derricks, Ninth Edition, September 1938.

Supplement No. 1, Standards No. 4, Substructures and rig portions of unit pumpers, September 1938.

Supplement No. 3, Standards No. 5-A, Casing, Drill Pipe, Tubing, September 1938.

Code 5-C-1, Transportation, Storage, Handling, and Reconditioning of Casing, Drill Pipe, and Tubing, First Edition, September 1938.

Standards 5-G-1, Pipe Line Valves, Second Edition, September 1938.

Supplement No. 3, Standards 5-L, Line Pipe, Sixth Edition, September 1938.

695 YEARS OF HAZARD SERVICE

Talk that men past 40 have small chance in today's industry is largely based on the assumption that the elder workers have been abandoned or shunted to the pension rolls before their days of productive labor are over.

A substantial argument in the negative has recently been provided by the Hazard Wire Rope Division of the American Chain & Cable Co., Inc., Wilkes-Barre, Pennsylvania. This wire rope company comes forward with the statement that its payroll carries the names of 14 employees, each with individual records of from 40 to 67 years of service, these men collectively representing a total of 695 years of continuous employment with one organization.

The accompanying illustration shows eight of the fourteen Hazard old-timers. Left to right in the back row: Philip Henry, 46 years of service; George Hoats, 67; Wally Schuler, 49; Pat O'Toole, 57. Front row: Pete Swinburne, 56; Hugh Murray, 50; Tony Blaum, 49; Bill McCarthy, 45. Not shown in this picture because their duties take them away from Wilkes-Barre are six other Hazard wire rope men: Fred Walters, with a service of 56 years; Benjamin J. Hill, 49; Philip Schumacher, 47; George D. Wicks, 43; Robert A. Stucke, 41 and Fred Vogel, 40.

Movies taken along the coast of Mexico were presented by Oil Umpire J. R. Pemberton at the Nov. 15 meeting of the San Joaquin Valley chapter of the A.P.I.

Bailey Meter Develops Power Type Pressure Gage

A Power Type Pressure Gage suitable for the measurement of extremely high pressures and accurate to one tenth of 1% of the reading, has been developed by Bailey Meter Co., Cleveland, Ohio.

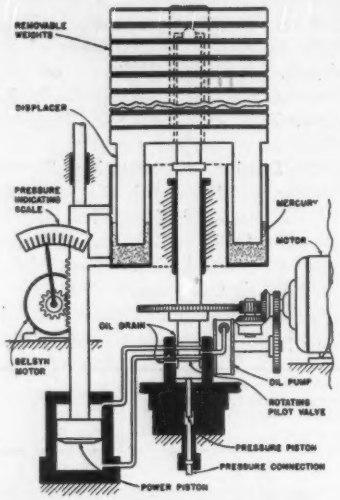


Figure 1

This Gage as shown diagrammatically in Fig. 1 provides accurate pressure readings on an indicating scale and may also transmit these readings to indicators and recorders located at distant points.

The pressure to be measured is applied to a small pressure piston which supports a pilot valve and a table loaded with removable weights. This portion of the pressure device which is continuously rotated to eliminate static friction is similar in principle to a dead weight pressure gage as the applied pressure is counterbalanced by the weight of the table and removable weights less the buoyancy of the mercury on the skirt of the weight table. A small motor serves to rotate the pressure piston and pilot valve, a ball bearing being provided so that the removable weights and weight platform need not rotate. The motor also drives a small oil pump which provides hydraulic pressure for operation of the power piston which in turn moves the mercury cup, the indicating pointer and the Selsyn motor for electrical transmission of readings.

When the applied pressure increases or decreases, the pressure piston, pilot valve and weight table rise or fall and in so doing permit oil under pressure to pass through the pilot valve to the upper or lower side of the power piston. If the pressure being measured increases, the pressure piston is forced upward carrying the oil pilot valve with it. As soon as the oil ports leading to the power piston are particularly uncovered oil is supplied above the piston and is drained from the lower side. The power piston thus moves downward, lowering the mercury chamber and tending to withdraw the skirt of the weight table from the mercury bath. This action results in a loss of buoyant force which causes the pressure piston to carry additional weight so that it is forced downward and the pilot valve is returned to neutral.

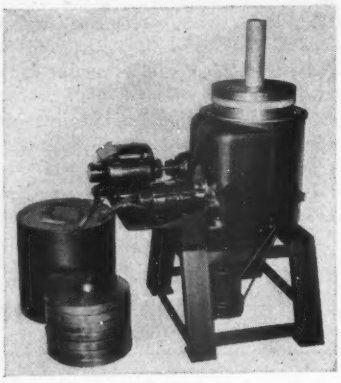


Figure 2

In this manner, for each pressure applied to the small rotating pressure piston, a definite position of the power piston, mercury cup and indicating pointer is obtained.

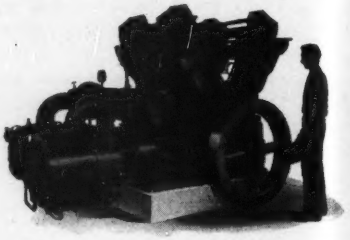
Figure 3

Gages operating on this principle have been built for suppressed ranges and extremely high pressures. The unit illustrated in Fig. 2 was designed for a maximum range of 10,000#/sq. in. to 12,000#/sq. in. The calibrated range remains constant at 2000# but the amount of suppression may be decreased in 1000# steps by the removal of weights, one at a time.

Monopoly Committee hearings will not begin until early in December.

New Heavy Duty Diesel Engine-Driven Compressor

A new heavy-duty Diesel-engine-driven compressor, known as the "XVO", has just been announced by the Ingersoll-Rand Co.



This machine is suitable for use wherever economy is a primary consideration, in independent or isolated compressor plants, or when existing power facilities are overloaded. It is recommended for use in mines and quarries, construction and contracting, drill barges, ice and cold storage plants, air-lift pumping and general industrial service.

The "XVO" is entirely new in design and combines a horizontal heavy-duty double-acting compressor with a heavy duty "V" type four-cycle Diesel engine in a single compact and comparatively lightweight unit which operates at a moderate speed.

Sizes are available for actual-free air delivery ratings of 625, 935, and 1250 cfm. for 100 lb. sea-level compression. In addition, a wide variety of air, gas, and ammonia compressing cylinders is available for pressures ranging from vacuum to 5000 lbs. per sq. in. and higher.

Detailed information is contained in a 16-page bulletin, form 3072, copies of which are available from the Ingersoll-Rand Co., 11 Broadway, New York City or any of their branch offices.

Hewitt Rubber Corp. Issues Hose Booklet

"Hewitt Oil and Gasoline Hose" is the title of a new four-page folder put out by Hewitt Rubber Corp., Buffalo, N. Y., describing and picturing in detail three Maltese Cross-branded products—tank truck hose, curb pump hose, and synthetic distillate hose. The latter product is designed for "wet" service on tank truck reels where the hose is continuously filled with oil. The folder also gives a brief description of Hewitt Monarch distillate hose, Duroil tank truck hose, Monarch propane and butane hose, and Wallabout gas burner hose. Gas burner hose is used as the connecting link between domestic storage tank and appliance. Reading time of the folder is less than three minutes. A copy may be had for the asking.

"Unaccounted for" Gas Is Reduced 25% to 50%

After more than five years of development and actual testing in the field on 157 installations, the Fisher Governor Co., Marshalltown, Iowa, has just announced its Fisher-King Gas Pressure Booster.

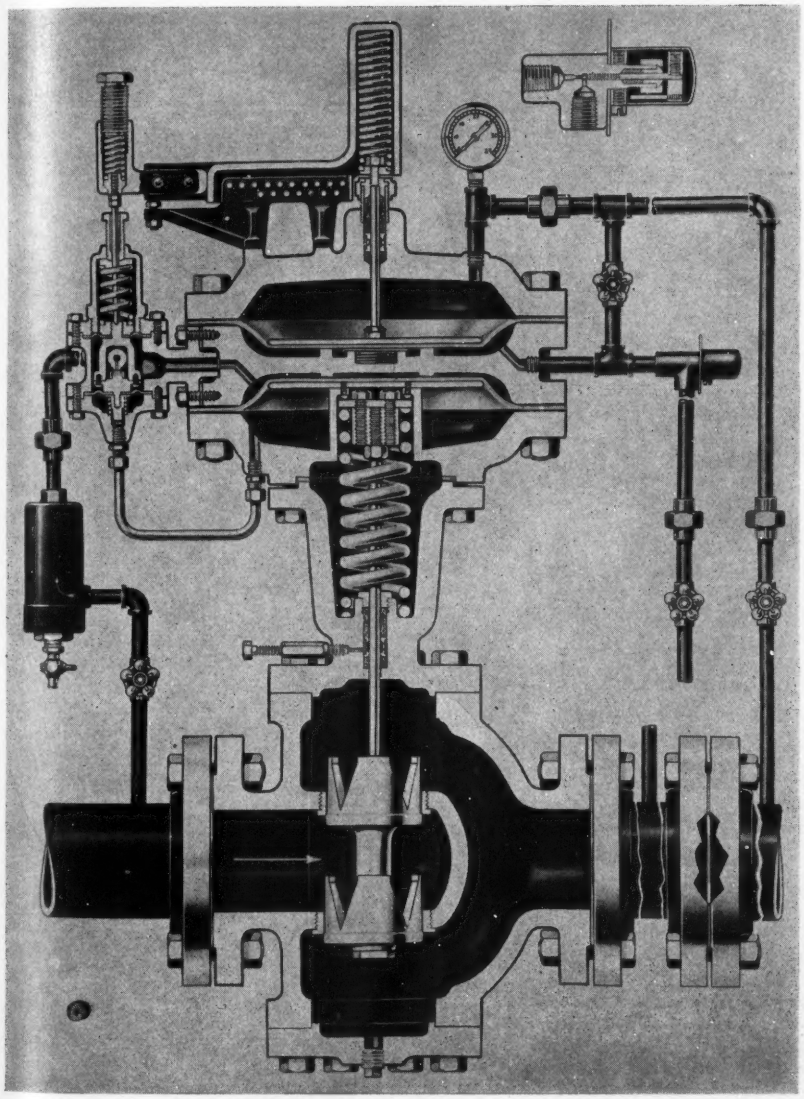
According to a recent statement issued by N. T. Chadderdon, president of the company, this new device enables gas system pressures to be lowered 25 to 50 percent, with corresponding reductions in leakage or "unaccounted for" gas.

An additional feature of the Booster is that it operates automatically, thereby greatly reducing man hours and truck mileage ordinarily necessary for adjusting lever and weight type regulators manually. Automatic operation of the Booster results in better regulated pressures, which in turn, cut down consumer complaints and improve good will.

Briefly, the Fisher-King Booster maintains a constant pressure at the low pressure point in the distribution system, regardless of the demand load. This is accomplished by boosting the downstream or reduced pressure in the system to correspond with, and counteract exactly, the pressure drop caused by friction in the downstream or reduced pressure piping system.

The Booster can be used for reduced pressures in either inches of water columns or ounces, but finds its widest application for pounds per square inch pressures with values up to 300 lbs. per sq. in., or higher.

An interesting 24 page book on this new device has just been published by the Fisher Governor Co. It contains colored diagrams showing Booster operation and construction together with exhibits of flow charts before and after installation in various gas systems throughout the United States. A copy will be sent to those interested.



R. H. Turner Joins Clark Sales Staff

Clark Bros. Co., of Olean, New York, have announced the addition of R. H. Turner to their sales staff, with headquarters at the Tulsa branch office and warehouse. Mr. Turner is a graduate of the U. S. Naval Academy, at Annapolis, and has had wide experience in the natural gasoline field, having served in the gasoline department of the Louisiana Oil & Refining Co., for several years, following which he became sales representative at Dallas for the C. F. Braun Co., of California.

R. H. Turner

Mr. Turner will assist the company's Tulsa sales staff in its sales and service operations in the Mid-Continent area.

Martin-Decker Executive Visits Mid-Continent Fields

E. L. Decker of Martin-Decker Corp., Long Beach, Calif., is now on an extended trip to Illinois, Kansas, Oklahoma and Texas in the interests of his company. In Chicago, "Deck" attended the A.P.I. convention and delivered a talk before that group on the care and maintenance of drilling instruments.

While on his trip, he will introduce the new Martin-Decker Special Weight Indicator to operators located throughout the Mid-Continent and Gulf Coast and will visit the Reed Roller Bit Co., Martin-Decker distributors in Houston, Texas. "Deck" expects to be gone about five weeks.

Edward I. Garrett

Geo. B. Gemmill

Russell E. Gough

W. E. Bouschor

Wire Rope Mfg. & Equipment Celebrates 15th Anniversary

It was in the spring of 1923 that the Wire Rope Manufacturing and Equipment Co. began the production of high-grade wire rope of the finest acid steel wire marked with two blue strands running through it. The new organization was made up entirely of wire rope experts. Three of the original officers, E. I. Garrett, president; George B. Gemmill, vice president; and J. E. McCormick, treasurer, are still actively in charge. Evan Gough, secretary and plant manager in the beginning, died in 1928. His experience of over 30 years in the wire rope industry made him widely recognized in the solution of wire rope problems. A son, Russell E. Gough, today capably fills the position of the father.

The Wire Rope Manufacturing and Equipment Co. are now actively entering into the sale of their product to the oil industry. This department of their business is under the supervision of W. E. Bouschor and complete stocks are being carried in California by the Hopper Machine Works, Inc., of Bakersfield, The California Wire Cloth Corp. of Los Angeles and Fred E. Barnett of San Francisco.

Formation Tested At Record Depth

On Oct. 13, 1938, a Johnston Formation Tester successfully completed what is generally believed to be the world's deepest drill stem test. The test took place in the Wasco area where the world's deepest oil well is already located, and was made at an approximate depth of 13,000 feet inside of 7-in. casing.

The patented Johnston Trip Valve, which detects drill pipe leaks before the test is made, showed up two drill pipe leaks that would have thrown the test completely off had they not been discovered. When the first attempt to open the Trip Valve was unsuccessful, a second go-devil was dropped and the valve still failed to open, giving definite indication that a drill pipe leak somewhere in the string had allowed fluid to enter above the valve.

The packer was then released from the seat by opening the Johnston Equalizing Valve and the tool was removed from the hole. Two leaking joints were found in the string. After these were repaired, the tester was rerun and this time the drill pipe remained dry, assuring a successful test. Only a small fluid rise occurred when the Main Valve was opened, which in conjunction with the pressure chart obtained from the test zone by the Johnston Pressure Recorder, gave conclusive evidence on the productive possibilities of the test formation.

It is interesting to note that, had the leak not been detected, the small fluid rise which occurred during the test would have been obscured, although not altogether excluded, and an entirely erroneous reading on the formation would probably have resulted.

The successful completion of this test proves that modern formation testing equipment can be used in the world's deepest wells with complete safety and efficiency.

The index number for petroleum products in August was 56.7, compared with 78.1 for all commodities.

All-Welded Freight Boat Has Pure Nickel Holds

The twin screw Diesel ship Dolomite 4, 300 ft. long and built to full ocean classifications under Lloyd's rating, has a beam of 43 ft. 4 in., a moulded depth

of 20 ft., and a gross tonnage of 5,500. Made of electrically welded steel channels bent to form her main structure, she has no rivets. Forty miles of welding were required for her construction.

Dolomite 4 has five main bulkhead cargo tanks lined with sheet nickel, which is spot welded to the frame and arc welded on the seams. More than 60,000 pounds of nickel were used for her main tanks.

On her maiden trip the ship brought a bulk cargo of 1,000,000 gallons of "water-white" kerosene to Chicago. This is said to be the first time that kerosene has ever been shipped in bulk by water, as it corrodes the metals usually used in cargo tank construction, thus becoming discolored.

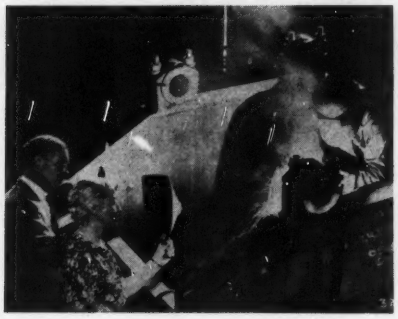
Dolomite 4 was built and is operated by the Dolomite Marine Corporation of Rochester, N. Y. John H. Odenbach is president.

Great Savings to Industry By Arc Welding Shown

The Jury of Award of the James F. Lincoln Arc Welding Foundation, Cleveland, Ohio, after judging thousands of papers submitted in the $200,000 Award Program, found that savings to industry by arc welding claimed by authors of papers aggregate $1,600,000,000. The jury's statement follows:

In the Oil Industry, subjects of papers for which authors received awards were:—well casings, reconditioning pipe lines in service, an oil pump motor base, bubble trays, well drilling, a coking still shell, welding joints directly to drill pipe, new rotary machine, a wire line wall sampler, a production mast for well servicing rotary hose coupling and an oil field slush pump. California winners were:

Award of $152.62 went jointly to G. W. Woods and R. S. Grant, engineers, Hughes Tool Co. A saving of $3,000,000 annually to the oil industry was shown available by their paper "Arc Welding Tool Joints Directly to Drill Pipe."



Grand Award of the James F. Lincoln Arc Welding Foundation, $13,941.33, went to Mr. and Mrs. A. E. Gibson, president and stockholder, respectively, The Wellman Engineering Co., Cleveland, Ohio.

Honorable mention awards of $101.75 went to the following authors of papers on design of oil industry equipment: Fred C. King, Jr., draftsman, The National Supply Co., Torrance, Calif.; L. W. Mosely, Baker Oil Tool Co., Huntington Park, Calif.; Joseph W. Gasper, designer, Maine Machine Works, Ltd., Gardena, Calif.; jointly to W. C. Russell and L. W. Stahl, superintendent structural division, and chief engineer, mechanical division, Emsco Derrick and Equipment Co., Los Angeles, Calif.

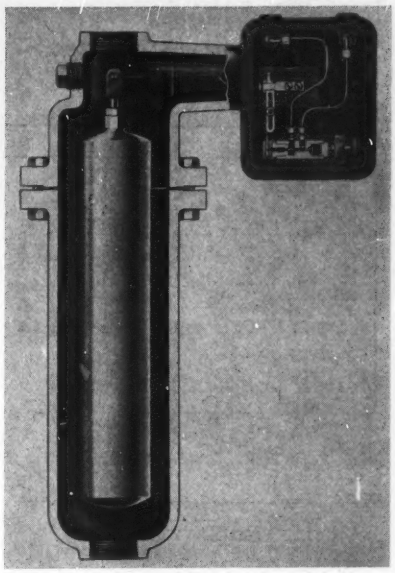
The Foundation's Award Program, which began 18 months ago, was judged by 31 engineering authorities from leading universities and colleges throughout the country, and has been hailed by leaders in science, education and industry as a valuable contribution to industrial progress in America.

Fisher Governor Develops New Liquid Level Control

A new and more efficient long range liquid level controller, the Type 246 Level-Trol, has been developed by the Fisher Governor Co. of Marshalltown, Iowa. It is a remote type, designed to maintain an extremely sensitive, throttling level control in towers, accumulators, reboilers and side strippers. The operating medium may be either air or non-corrosive gas.

This new control can be used on liquids of all gravities. It is especially suited for high viscosity oils, because its float operates without guides, which ordinarily cause friction and sluggish operation. The Level-Trol delivers operating medium pressures of 2 to 15 pounds to the diaphragm valve.

The Fisher Level-Trol utilizes a new principle of operation, based on weight measurement of buoyancy rather than a float riding a moving level. All lost motion is eliminated from the float mechanism. An anchored cantilever spring supports the float, which is especially weighted to sink in the liquid being handled. As the liquid rises, that displaced by the float creates a buoyancy which partially relieves the cantilever



spring. As the spring returns toward its normal position, this action is transmitted to the pilot valve by an arm that contacts the spring through an extremely small rotary stem. Fisher engineers state that a level change as small as 1/32 of an inch will register a pressure change at the diaphragm.

The Fisher Level-Trol is available in two sizes. One with a 14 inch adjustable level change. The other with a 32 inch adjustable level change.

Complete information about the new Level-Trol is contained in Catalog F of the Fisher Governor Co. This catalog will be sent upon request.

Oakite Products Issues Industrial Safety Booklet

How modern cleaning methods and materials effectively promote increased safety of plant, product and personnel is briefly outlined in a new 12-page booklet, entitled "Greater Industrial Safety", just released by Oakite Products, Inc., New York, N. Y.

Considerable attention is devoted to eliminating commonly recognized fire hazards and fire hazardous conditions and avoiding certain well-known occupational hazards. Safeguarding health through proper plant sanitation maintenance is also discussed. Copies are available free on request. Address yours to Oakite Products, Inc., 5504 Hollywood Blvd., Los Angeles, Calif.

Business and Professional Directory

THE
HANCOCK OIL COMPANY
of
CALIFORNIA

PRODUCERS - REFINERS
MARKETERS

J. R. PEMBERTON
Oil Umpire
1110 Security Title Insurance Bldg.
Los Angeles, Calif.
TRinity 9705

MARTIN VAN COUVERING
PETROLEUM ENGINEER
405 South Hill Street
LOS ANGELES
CALIF.
MIchigan 8781

GERARD HENNY, Ph.D.
Consulting Geologist
417 S. Hill St. Los Angeles
VAndike 7053

M. H. SOYSTER
Petroleum Engineer and Geologist
4321 Clinton St., Los Angeles, Calif.
OLYMPIA 2786—If no answer call
MUtual 2161

LOUIS C. CHAPPUIS
Petroleum Engineer and Geologist
508 Wright & Callendar Bldg.
Los Angeles MUtual 4821

Classified Advertisements

CLASSIFIED ADVERTISING RATES

small type: 50c per line per insertion. Count six words to a line. Minimum charge $2.00. All classified advertising payable in advance. Four consecutive insertions at price of three, if copy does not change.

24 times .....$ 7.50 per inch
1 time ..... 10.00 per inch
Not responsible for more than one incorrect insertion.

WATER DEVELOPMENT GUARANTEED

..Water surveying service. David Romey, Phone Wilmington 1918, 507 Broad Ave., Wilmington, Calif. tf

REFINERIES AND GASOLINE PLANTS

Reconditioned or new heat exchangers, stills, fractionators, absorbers, condensers, at cut prices. Plants designed any size for any use. W. F. Pyne, 909 Ardmore Ave., Los Angeles. DRexel 1412. tf

PIPE

5000 ft. 10¾" O. D. Std. P. E.; 2000 ft. 12¾" O. D. Std. P. E.; 4000 ft. 5" Drill, P. E. Line; 9000 ft. 6" Drill, P. E. Line.
IMPERIAL PIPE & SUPPLY CO., 2901 Santa Fe Ave., Los Angeles. JE. 1104. tf/b

MAPS
Large maps of Los Angeles Basin oil fields and map showing all California oil fields. Price $15.00 each on paper and $20 each on cloth. Individual state oil and gas maps of Mid-Continent and Rocky Mountain regions. Maps show geological cross sections at base. These maps indicate wells drilling, wells producing and abandoned, with depths.
All maps revised up to date of purchase.
JAMES C. BRANSFORD
1127 Story Bldg.
Los Angeles, Calif.
Phone: TUcker 7530

CORE ANALYSIS LABORATORY
(Incorporated)
Specializing in the physical determination of porosity, permeability, oil and water saturation of core samples.
P. O. Box 461 Telephone
Ventura, Calif. Ventura 6355

GRAYDON OLIVER
PETROLEUM ENGINEER
215 West 7th Street
Los Angeles, Calif. VAndike 3696

Oil Men's Calendar

C.N.G.A. Meeting First Thurs. Each Month.

December

15—Industrial Marketers of So. Calif.—Industrial Movie, University Club, Los Angeles.

January, 1939

9-13—Society of Automotive Engineers, Annual Meeting, Detroit, Mich.

February

20-24—12th National Asphalt Conference auspices of The Asphalt Institute, Biltmore Hotel, Los Angeles.

March

22-24—American Association of Petroleum Geologists, Oklahoma City.

April

24-29—Oil World Exposition, Inc., Houston, Texas.

Steam Generator Bulletin

A practical evaporator for generating steam from raw untreated water by using the heat in hot gas oil or cracking coil tar, is described in a bulletin which has just been published by The Griscom-Russell Co.

This bulletin explains how these units, known as Bentube Steam Generators, effectively overcome the double problem of keeping the outside of the evaporator tubes free from hard water scale accumulation and prevent clogging of the tube interiors from tarry or dirty liquids. The bulletin concisely describes the principle of operation of these units, and includes exterior views, interior views and sectional diagrams which graphically explain their design and construction. Superintendents and engineers of refineries can obtain copies of the bulletin by addressing The Griscom-Russell Co., 285 Madison Avenue, New York City, and asking for Bulletin 520 on Bentube Steam Generators.

Factory sales of cars and trucks amounted to 227,820 in October, 154 per cent above September and 33 per cent below October 1937.